

They're everywhere. Which one's right for you? Page 74

Companies are working on retention strategies and building up their walls to keep raiders out and employees in. Page 54



Avoiding server overload is easier with load-balancing technology. Page 76

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS • WWW.COMPUTERWORLD.COM

MAY 11, 1998 • VOLUME 17, NUMBER 10



THE BOEING CO.'S GRAEBER JORDAN handles wayward sites quietly: "We try not to condemn the 99.9% for the weirdness of one or two."

INTRANET OVERLOAD

Intranets are sprouting like weeds in large corporations. Boeing has at least 2,300, US West has 600, and your company may have more than you know, hidden in various nooks and crannies, reports *Computerworld* senior editor Carol Sliwa. Now the challenge is to figure out how to manage this semichaotic situation—such as making sure the network and content are reliable and secure—without killing off the gung-ho spirit of the mavericks who created these baby "intranettes." If the central IT department becomes overly controlling, end users will revolt.

See report, page 20

WHITHER WINTEL: STRONG AS EVER?

Users say Intel settlement, Microsoft trial won't affect desktop dominance; competition might

BY MATT HAMBLEN

Despite government antitrust actions and some new competition, the Wintel duopoly will continue to dominate the desktop for a long, long time, users and analysts said last week.

"If the power's real and [the] perception of it is real and if

the customers don't have a strong belief that Microsoft's practices will be modified, [the government] may not have accomplished much at all," said Tyler Baker, an attorney in the antitrust division of the U.S. Department of Justice in the early 1980s and now a part-

ner at Carrington, Coleman, Sloman & Blumenthal LLP in Dallas.

In fact, observers said competition from innovations such as the Linux operating system and cheaper chips will be more important in checking the future growth of desktop partners Microsoft Corp. and Intel Corp. than any current government investigations.

Wintel, page 101



"I don't think Intel has a monopoly. AMD is giving them a run for their money."

—James H. Goodright, SAS Institute Inc.



"Intel was incredibly smart to settle. Look at what the trial has done to Microsoft's reputation."

—Esther Dyson, EDventure Holdings Inc.



"For IT managers, the government's efforts could 'mean more diversity, better choices and probably better commercial conditions in the long run.'"

—Phillip Kahn, Starfish Software Inc.



"Keeping up with technological advances is more relevant to IT's future than second-guessing the legal issues."

—Heidi Reizen, consultant, formerly at Apple Computer Inc.



"I think the settlement focuses Intel on the business of hand and will prevent it from being distracted."

—John McKinley, Merrill Lynch & Co.

SAP SERVICE CULLS ERP PAYOFF DATA

Information could help justify users' spending

BY CRAIG STEEDMAN

SAP AG is quietly putting together a set of services aimed at making it easier for R/3 buyers to measure the return on their investments—a capability several SAP users said they're desperate to have.

Sources said SAP is developing a consulting and sales program, called ValueSAP, that will utilize a database of return-on-investment and business-performance data culled from R/3 users by a consul-

ting firm and a university that are both in Switzerland.

Prospective buyers of SAP's SAP, page 16

CABLETRON INKS DIRECTORY DEAL

Novell, Netscape pacts will simplify networking

BY BOB WALLACE

Cabletron Systems Inc. is finalizing negotiations to license directories from Novell Inc. and Netscape Communi-

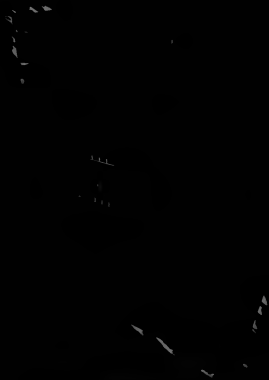
cations Corp. in an effort to help users cut costs and simplify administration of complex networks, *Computerworld* has learned.

The Rochester, N.H., networking vendor is expected to demonstrate integration of Novell Directory Services and its equipment at Novell's annual Brainshare conference next week, according to industry sources.

Users stand to gain from the marriage of directories and networks, which would automate the long and arduous manual process of separately configuring, reconfiguring and maintaining sprawling networks comprised of myriad Cabletron, page 16

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BIRTH OF A LEGACY

With the year 2000 fast approaching, many might like to see Cobol laid to rest. But in 1956, Cobol's creators were doing all they could to make sure it saw the light of day. Page 82

COMPUTERWORLD

MARCH 15, 1999

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WE GOT NO COOPERATION FROM OUR TECHNICAL PEOPLE. I MEAN ZIP. THEY DIDN'T EVEN ANSWER OUR TELEPHONE CALLS.

MIKE CAREY, SENIOR VICE PRESIDENT FOR NEW MEDIA AT THE WEATHER CHANNEL, ON IT DEPARTMENTS THAT RESIST COMMERCIAL WEB PROJECTS. SEE PAGE 45

AT DEADLINE

Mortal Alliance Targets Voice, Data Mix

A Mortal Networks-led alliance that includes Hewlett-Packard Co., Microsoft Corp. and Intel Corp. will convene this week as Mortal unveils voice and data convergence products using each of their team members' components. Mortal confirmed it will unveil a new brand of products that will support voice and data but stressed it won't replace private-branch exchanges.

Laptops With Intel Chips Get Privacy Fix

Intel said it will release a fix to disable a prototype version of the controversial processor serial number it incorporated into certain Pentium II and Celeron chips for notebooks. The chip, designed by Intel to ensure secure electronic-commerce purchases, sparked a controversy among consumer-privacy advocates. It was thought to exist only on the new Pentium III processor.

Gates: NT Servers to Conquer High End

Microsoft CEO Bill Gates vowed in a speech in Japan that Windows NT will "conquer" the high-end server market and eliminate any skepticism about its scalability within the next year. But he also said making PCs easier to use "is an area that is ripe for innovation." After spending a day reviewing error messages that Windows displays to users, Gates said, "even I couldn't understand a great number of them."

Short Takes

Several California retailers are named as defendants in a Santa Costa County lawsuit alleging they violated California's Unfair Business Practices Act for failing to tell customers whether PCs sold in their stores can handle the data charge to Jan. 1, 2000. . . . Republican presidential candidate Elizabeth Dole will accept campaign contributions on her Web site (www.adele2000.org) using technology from a German electronic-commerce software vendor.

IT LABOR ISSUES ADD TO RETAILERS' WOES

*Chains hard hit by losses, small budgets,
find it tough to stay on the cutting edge*

BY NARR COLS-GOMOLSKI

A BLIND SPOT of store closures and mergers in the retail industry (see box) point to a consolidation in some sectors, made worse by IT staff shortages and the need to update technology.

I.C. Penney Co. closed 75 stores in January and last week announced a new merchandising strategy to improve its weak sales. Last month, Service Merchandise Co. said it would close more than 130 retail stores. In December, Ames Department Stores Inc. took over Hills Stores Co. And at about the same time, Caldor Corp. announced plans to close its doors for good.

Though the consolidation has cost information technology jobs, several retailers said they're still hurting for people. Industry watchers are predicting more outsourcing and more mergers driven by a need to shore up IT weaknesses, which many retailers can't afford to fix on their own.

Skills Lacking

"IT used to mean 'let's do point-of-sale on the computer,'" said Kenneth Palmer, MIS director at Cramers Cashway Inc., an East Stroudsburg, Pa., home center chain. "Now it means manage your inventory better, identify your best customers and sell on the Web."

The problem is that retail IT departments often lack per-

soneal with the skills necessary to handle those tasks, observers said.

Retail sales overall have been strong this year. Sales rose more than 6% in February, according to a Prudential Securities Inc. index of 72 retailers. Discount giants like Wal-Mart Stores Inc. and Kmart Corp. — did the best, while department stores saw

because they have complicated supply chains that include lots of foreign suppliers.

On top of all that, many have the added work of developing a competitive Web site on which to sell their wares. A recent study of 300 retail executives done by El Segundo, Calif.-based Computer Sciences Corp. showed that 80% of department stores plan to implement online shopping in the next two years.

The money to do all that can be hard to come by. Only 0.2% of retailer revenue is spent on

worked well, but the company turned to an outsourcing for its electronic-commerce applications because "we never did find anybody who knew what they were doing," said CIO Charles Marsh.

Woes Stack Up

Staffing issues haven't been limited to programming talent. Kmart hasn't had a CIO for several months. Amazon.com Inc. is in a legal battle with Wal-Mart after hiring about 10 former Wal-Mart employees who are data warehouse and merchandising experts.

Don Gilbert, senior vice president of IT at the National Retail Federation in Washington, predicted that more retail firms will turn to outsourcing or look for suitable partners to fill their IT weaknesses.

Finance said about 25% of retailers now outsource their data center operations, a figure he said could increase by 20% in the next year. To a recent Gartner survey, IT managers at retail firms said they were more likely to outsource help desk, client/server application development, desktop administration and networking functions in the next year. ■

Recent Retail Deals and Closures

COMPANY	WHAT HAPPENED
Caldor	Bankrupt since 1995, currently liquidating its inventory
Service Merchandise	Announced plans last month to close more than 130 stores
I.C. Penney	Began the year by closing 75 stores and hired off nearly 5,000 workers
Montgomery Ward & Co.	Signed a five-year IT outsourcing contract earlier this month

flat sales or moderate gains.

Still, retailers are in a bigger bind than most industries, said Ed Jinneman, an analyst at Gartner Group Inc. in Mountain View, Calif. They're plagued by the general shortage of IT workers and high turnover that many companies face but have the added burden of lagging behind in their adoption of new technology. As a result, many are still saddled with aging, proprietary systems that aren't attractive to IT workers who have cutting-edge skills.

And their year 2000 projects are more daunting than most

IT, according to a recent report by Aberdeen Group Inc. in Boston. Manufacturers, by comparison, spend 2.4% of their revenue on IT. Also, often cash-strapped retailers are further handicapped by a lower pay scale.

"We're competing with banks and high-tech companies whose salaries are generally a lot higher," said Brian Kilcourse, CIO at Longs Drug Stores Corp. in Walnut Creek, Calif. To cope, Longs has raised its IT salaries, is leaning more on outsourcing and is "trying to lower the costs of supporting our IT systems" — possibly by installing systems that feature automated recovery, he said.

Before it was acquired last October, Camelot Music Inc. a North Canton, Ohio, chain of about 500 music stores, was struggling to find IT staffers. The company decided to put some of its Unix experts through a six-week course on Java programming to migrate from older point-of-sale systems. That

MORE ONLINE

For resources related to the retail industry and information technology, visit our Web site: www.computerworld.com/news

Corrections

A March 8 news item, "Arba Reduces Hassle in Online Purchasing" (page B), misquoted Interleaf Electronic Commerce LLC.

A Feb. 6 QuickStudy feature on CD-R and CD-W (page 77) contained several errors. CD-RW (CD rewritable) discs must be formatted, but CD-R (CD recordable) discs don't have to be. In addition, the use of master CD-R or CD-RW discs will protect a hard drive from being corrupted by files downloaded from the Internet.

Microsoft Mum on Reorganization Plans

BY DAVID OWEN

Microsoft Corp. would neither confirm nor deny published reports that it might unveil the results of its internal reorganization plans as soon as this week.

Plans to orient its major lines of business toward customer segments have been un-

der discussion for more than a month. [CW, Feb. 15]

Microsoft needs to give each unit substantial autonomy to combat complaints that it is increasingly unresponsive and bureaucratic, said Jim Balderston, an analyst at Zona Research Inc. in Redwood City, Calif. ■



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MICROSOFT E-COMMERCE USERS KEEP OPTIONS OPEN

Current users happy, but Redmond must prove its servers can run e-commerce sites

BY SHARON SAUDIN

Microsoft has launched a campaign to convince businesses that its server software can run major electronic-commerce sites. And many of its large customers said they have been pleased with the results. Still, beyond that Microsoft commerce frontage, many use a mixed environment — and aren't necessarily committed to the Microsoft path for life.

"We're not married to Microsoft," said Judy Neuman, vice president of interactive media at Eddie Bauer Inc., a clothing chain in Redmond, Wash. "So far, this has worked beautifully and supported us. But when our [online] business

grows [to] 10 times what it is today, I don't think we'd be very successful if we were using the same [Microsoft] infrastructure. Microsoft knows that, and that's why they're busy evolving their products."

Units systems are favored by many companies because they scale well for high-volume, high-transaction commerce, analysts said. But Microsoft Corp.'s top customers said the company's products afford them flexible, economical ways to scale a site. Adding a Windows NT server can be cheaper than

adding a Unix server, and the trade-off — more servers to manage — hasn't been a problem so far, users said.

Companies further expect Windows 2000 will help ease scalability concerns.

"I believe BarnesandNoble.com has never had any downtime as a result of the horizontal scalability of Microsoft," said Gary King, CIO at Barnes & Noble Inc. The New York-based bookseller relies on Microsoft products for the bulk of its Web architecture, although it does use some Unix-based, middle-tier systems for sourcing orders and getting them ready for shipment.

Office Depot Inc. in Delray Beach, Fla., also has a mixed environment. Microsoft's soft-

ware serves as the Web front end and takes the orders, then IBM AS/400 systems pass information back to the company's IBM mainframe.

Office Depot this year plans to eliminate that AS/400 layer, CIO Bill Seltzer said. He said he hopes to eliminate some of the Microsoft middle portion at some point as well, connecting users' browsers directly to the mainframe. "It's a cleaner architecture," he said.

David Fry, president of Fry

Multimedia Inc. in Ann Arbor, Mich., said Microsoft's Commerce Server (formerly Site Server) can help users who need flexibility on the front end. Fry said he considers using Unix-based architectures when the tasks a site needs to perform are simple and scalability is the prime issue. "For me, it's the tools that are the issue, not the operating system," said Fry, whose company set up such high-profile Web sites as those of 1-800-Flowers Inc., Eddie Bauer, Gordon's Chocolaterie Inc. and Staples Inc. ■

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BILL SELTZER says Office Depot hopes to remove some of the Microsoft layer from its e-commerce system

New NetWare to Boost Speed, Server Management

BY SHARON SAUDIN

With Novell Inc. talking about "supercharged" processing and better server management in its upcoming version of NetWare, industry watchers said the company is sticking an eager foot through a door that Microsoft Corp. is leaving wide open.

Novell last week announced that it plans to ship a beta release in April of the next version of its NetWare network operating system. Code-named Six Pack, the release is being designed to make it easier for information technology administrators to manage servers while speeding the applications that run on them, a Novell spokesman said.

The new version will sport an updated kernel, the spokesman said. NetWare 5.0 was the first release that had a multiprocessing kernel, and he said the company has "supercharged" it in the upcoming version. But he declined to give any numbers on how much that can speed up processing.

The spokesman also said the new version will have server management tools built right

in to the operating system, which should let IT administrators handle, for example, IP address management, printer management and integration of backup software.

"Having management right in the OS means one less thing to learn and integrate," said Rodolphe Labrousse, global integration manager at General

Motors Acceptance Corp., a car-finance firm in Detroit. "Speed and functionality are more effective if it's part of the OS."

Gary Porter, senior systems manager at the University of Kentucky in Lexington, said he plans to move to the new version. "Any time we can speed things up ... that's going to help," he said.

The new NetWare, which doesn't yet have a version number, will be demonstrated at BrainShare '99, Novell's user conference in Salt Lake City this month. Specifics should be announced then. ■

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Early Users Give Kudos to NDS 8.0 Beta

Directory's ease of use, scalability liked

BY SHARON SAUDIN

Early beta testers are using the new version of Novell Inc.'s directory services to extend their management reach across the enterprise, cut costs and save IT staff for more critical tasks.

Novell Directory Services (NDS) 8.0 started beta testing last week, and early testers so far give it high ratings.

"Novell reached into the magic box for this one and pulled out the silver-bullet code," said Gary Porter, senior systems manager at the University of Kentucky in Lexington. "I'm piling stuff onto the directory, and I haven't been able to break it."

No official release date has

been given for NDS 8.0, key changes to which include management of more than working directories and a significant increase in its object-handling capacity [CWI, March 8].

Peter Cruikshank, networking architect for the Space and Naval Warfare Systems Command in San Diego, the IT arm of the U.S. Navy, aims to tie together new regional IT centers across the country with one directory, NDS 8.0, which he is beta-testing. "I need a single point of administration ... one day for routers, application management, different platforms," he said. "We're looking at hundreds of thousands of users — that's a lot to manage."

Moony Sharma, chief technology officer at Maritime Telegraph and Telephone Ltd., a \$650 million telecommunications firm in Halifax, Nova

Scotia, said he hopes to change his business with NDS 8.0.

Maritime Telegraph is planning to serve as an IT department for local companies hosting their servers, managing their users and files and handling individual user IDs that could be used whether the person was at work, at home or on the road, Sharma said. "It's enough scalability even for major telcos. To do this otherwise, we'd end up managing thousands of directory trees."

"Novell is really getting this right," said Laura DiDio, an analyst at Boston-based Giga Information Group Inc. She added that installation is easy, scalability is better than the current version and security is tight. DiDio said NDS, which manages NetWare, Unix and NT, is "miles ahead" of Microsoft Corp.'s Windows-only Active Directory, slated to ship with Windows 2000. But, she said, Novell "still has an uphill battle because Microsoft has so much of the market." ■



MOONY SHARMA says NDS 8.0 has enough scalability for major telcos

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BRIEFS

Y2K System Crash Hits Nuclear Plant

Philadelphia-based Peco Energy Co. confirmed last week that a replacement monitoring system at its Peach Bottom nuclear power plant crashed on Feb. 8 during year 2000 testing. The plant, located near York, Pa., continued to operate at full power through the crash, a spokesman said. The crash occurred because of improper test setup problems, he said. Plant engineers had anticipated to not allow to Jan. 1, 2000, an external clock that was linked to the monitoring system.

Web Aids Lands' End

Lands' End Inc. said its Internet sales rose threefold, to \$62 million, for fiscal 1998. Web-based sales were 4.4% of Lands' End's overall sales, which hit \$1.37 billion.

Oracle Profit Jumps

Oracle Corp. last week reported a \$290 million profit for its fiscal third quarter ended Feb. 28, up 30% from the \$225 million total a year earlier. Revenues for the quarter increased 16% to \$2.1 billion, but sales of Oracle's databases and business applications were up just 7%, to \$825.7 million.

Short Takes

BELLCORE, the telecommunications research arm of BELL CORP., has changed its name to TELCORDIA TECHNOLOGIES INC. ... BELL/SOUTH WIRELESS DATA and VERIFONE INC. have announced they are forming an alliance to build wireless point-of-sale systems. Products will be introduced this year. ... PEOPLESOFT INC. said it will bundle data extraction and transformation tools made by INFORMATIONAL INC. with its PeopleSoft Warehouse data warehousing software this fall. ... Systems management software vendor BMC SOFTWARE INC. has acquired NEW DIMENSION SOFTWARE INC., an Israeli enterprise management and job scheduling software maker, for about \$850 million. ... Web portal U2005 INC. has paid \$50 million for WE2400 INC., an Internet health site, to become its exclusive provider of health information.

New Generation of Scanning Tools Mask Source of Attack

Espionage has 'never been so easy'

BY ANN HARRISON

For several weeks, television networks have aired dramatic stories of international attacks on Pentagon computers. But security analysts said last week that those attacks are more likely the work of a new generation of automated scanning and attack tools that simulate coordinated, multinational probes.

John Hamre, deputy secretary of defense, told congressional subcommittees last month that unidentified crackers have been launching attacks from as many as 15 locations worldwide. The U.S. Department of Defense insisted the attacks haven't breached classified networks but declined to confirm details.

However, a bulletin released last week by the CIO Institute (www.cio.org), a private organization of federal government CIOs, suggested a different scenario. It said that, just before Christmas, experts began noticing widespread use of sophisticated scanning tools that mask their activities in a barrage of what appear to be multinational attacks.

Malignant Tools

"Military and commercial espionage has never been so easy," the bulletin said. It added that the new tools are more malignant than their predecessors because they can spread out attacks to hide below the monitoring thresholds of audit trails and intrusion-detection software.

"We should be worried about automated attacks. The tools have never been this good," said Alan Paller, director of research at SANS Institute, a Bethesda, Md.-based research and educational organization for systems administrators, security and networking professionals.

By embedding those tools in Perl script, crackers can automate the entire process of identifying computer systems, locating known vulnerabilities and exploiting those holes to gain root access. For example, software called Nmap per-

forms decoy scans using any selection of TCP/IP addresses. NMap allows a relatively unso-

phisticated cracker, located in the same city as the targeted network, to mimic a coordinated

group of international cyber-attackers.

Paller said the Pentagon attack didn't have the correct signature for NMap, but he noted there are several other tools with similar capabilities. But Rob Clyde, security expert at Ascent Technologies Inc. in Rockville, Md., said he believes NMap does fit the profile of the Pentagon attacks. "NMap is not new. It's just this version has come out with the capability of setting things up as a decoy of where the scan is coming from," Clyde said. ■

MORE ONLINE

For security resources and hacker links, visit our Web site.
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Best Offense Is a Good Defense

To defend against the new generation of scanning tools, companies should establish automated monitoring and auditing procedures along with rapid system administration response, experts said. Smart organizations are running automated vulnerability scans three times per year.

A bulletin from the CIO Institute said companies should encourage competition among their vulnerability testing teams. They should include an inside team, an outside

team from a systems integrator or accounting firm and another from a smaller specialized organization. Once holes are located, companies must allocate trained staff to make sure the holes are closed before they are exploited.

The key challenge, said Alan Paller, research director at the SANS Institute, is recruiting technically capable people and ensuring them to make sure they don't fall behind attackers.

— Ann Harrison

WIN 98 GLITCH HEATS UP PUSH FOR PRIVACY

Bill would inform consumers of threat

BY SHARON DAUGH AND ANN HARRISON

THE HAILSTORM running down on Microsoft Corp. is raising much-desired awareness about the privacy pitfalls that await most corporate customers, industry observers said.

It's also pushing one legislator to pass new efforts to pass a bill designed to ensure that consumers are aware of what information is being collected on them and how it would be used.

The bill would also give consumers the right to deny the use of such data.

Privacy advocates from the Washington-based Center for Democracy and Technology will meet with the Federal Trade Commission (FTC) this week to press for an investigation into the controversial serial number embedded into the Pentium III processor. A handful of privacy

groups, including the center, have also filed with the FTC a complaint against Intel.

Fueled the fire was last week's announcement by Microsoft, promising to release a patch to fix a glitch in its Windows 98 desktop operating system that automatically — and without the user's knowledge — sends a hardware identifica-

tion code back to a Microsoft information bank.

The Big Picture

While privacy advocates hoisted a warning flag, corporate users and one analyst pointed to a larger privacy issue.

"That Microsoft glitch is scary, but privacy as a whole is scarier these

days," said Denis Darvaz, senior network consultant at Kaiser Foundation Health Plan in Walnut Creek, Calif. "That bug means Microsoft knows more about me than I wanted them to. . . . But the bigger problem is that I have to worry about that, and I have to worry

about cookies and sniffers and ignorant users who download things they shouldn't and give out too much information."

Intel has offered a way to disable the serial number, but it was quickly compromised by a German hacker [CW, March 1]. As for Microsoft, it says it's moving quickly to mend its mistakes.

Rob Bennett, Microsoft's group product manager for Windows, explained that the problem lies in the Registration Wizard that pops up to help users through the Windows 98 setup process.

The wizard asks users if they want to register with Microsoft online, automatically sending in configuration information that will be stored in the Call Center database and be used for support calls.

The problem, Bennett said, is that whether or not a user wants to register, the wizard sends a hardware identification code back to the company.

MICROSOFT'S ROB BENNETT: Service Pack will include fix





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Officials File Net Taxation Lawsuit; Warn of Business 'Greed'

BY PATRICK THIBODEAU
WASHINGTON

The Internet Tax Freedom Act may have provided a short-

term tax moratorium for online businesses, but it hasn't ended the battle over taxing electronic commerce.

A lawsuit filed last week in federal court by state and county officials more than underscored that point. The law-

suit contends that the congressional commission on Internet taxation is tilted toward businesses and against local offi-

cials eager for tax revenue from online sales. Nine of the members appointed to the commission represent businesses and eight represent state government.

If Congress persists "in demanding this illegal composition, [this commission] is not about a new, growing industry... it's about greed," said Paul Johnson, commissioner of Minnesota's Hennepin County, which includes Minneapolis.

Congressional leaders said they want to resolve the imbalance. But Johnson's words reflect the tension over a shift in sales from Main Street to the Internet. Online sales, which were estimated at \$8 billion last year, should reach \$108 billion by 2003, or about 6% of all retail sales, according to Forrester Research Inc. in Cambridge, Mass.

Tension Mounting

Political pressure for online sales taxes is certain to grow, and experts said businesses shouldn't wait for Congress—which approved the 3-year moratorium in October—to resolve the issue. Some legislatures have already taken action.

Hoover's Inc., an Austin, Texas-based provider of online financial information, moved a server to Maryland last year in part because of concerns about state tax policies.

Texas was considering treating servers as physical stores and forcing online merchants to collect sales taxes from out-of-state customers who downloaded information from them.

By moving the server, the tax exposure ended, said Patrick Spain, Hoover's CEO. Texas is one of eight states exempted from the Internet Tax Freedom Act because its laws predate the federal law.

Putting servers in "cyberterritory" states is something other businesses may want to consider, said Richard Prem at Deloitte & Touche LLP in San Francisco, co-author of the book *Taxation of Cyberspace*.

Companies can also protect themselves by designing electronic-commerce systems that build in the necessary tax information and collection fields, even if they aren't currently activated, Prem said. ▶



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TRAVEL AGENTS TO SEEK U.S. PROBE OF AIRLINES

Three groups claim airlines' direct ticketing via Internet unfair

BY STEWART DECK

THREE TRAVEL SERVICES groups, under pressure from the growth in direct ticket sales via the Internet, are on the verge of asking the U.S. Department of Justice to look into possible anticompetitive behavior by U.S. airlines.

"Yes, this filing is imminent," said James Ashurst, a spokesman for the American Society of Travel Agents (ASTA) in Alexandria, Va. — one of the three groups. "It is important that as the Internet continues to grow, the airlines are not allowed to make this medium their own proprietary system," he added. "They're trying to create a system that makes it nearly impossible for an agent to make money booking tickets via the Web."

The filing will name the Airlines Reporting Corp., a clearinghouse controlled by the airlines, instead of individual airlines, joined with ASTA as the Interactive Travel Services As-

sociation and the Coalition for Travel Industry Privacy.

Allan Matcen, an Airlines Reporting spokesman in Fairfax, Va., said the group wouldn't comment until there was a filing. The travel agents' troubles stem from the ability of the airlines — under guidelines established with the passing of the Airline Deregulation Act in

1978 — to set retail ticket prices while also determining maximum agent commissions. Online agents, including Microsoft Corp.'s Expedia Web site, are also not allowed to book same-day tickets.

A recent study by Nicole Vandercil, an analyst at Jupiter Communications Inc. in New York, showed that travel agencies handled more than 77% of the tickets sold in 1996 but only 52% in 1997. In 1997, airlines and other direct suppliers garnered 48% of online sales.

Reid Detcon, executive director at Interactive Travel Services in Washington,

claimed that what the airlines are doing "is discriminating against e-commerce" from other players and driving traffic to their own sites.

Flying by Different Rules

Internet changing the way airlines, agents do business

BY SHARON MACILIS
MONTE CARLO MONACO

Airlines are discovering that the Internet may do a lot more than simply open another sales channel.

From pricing to customer relations to filling unsold seats, the Web is changing the travel industry, according to speakers at last week's Airlines@Internet99 conference here.

For example, as consumers have more access to ticket price information, they "are gradually challenging the vagaries of our pricing," said Julia Groves, manager of digital channels at British Airways

PLC in London. "The pricing structure cannot stay exactly the way it is."

At an industry conference last week, a British Airways PLC executive said travel agencies will need to, and like-

ing loyalty is personalization," he said. "Most passengers' interaction with airlines is anonymous."

Airlines could offer detailed, personalized information to their customers on the Internet, he said. They should also make sure passenger information is available to airline employees at every point.

From reservations to in-flight, Shavit said. That way, if a valuable customer registered a complaint about service, the check-in agent and flight attendants would have a record of it the next time that customer flew with the airline.

Already, American Airlines' redesigned, more personalized Web site has a better "look-to-book" ratio (browsers to purchasers) than the company's call center, said Mark Tilden, chief technical officer at Sight & Sound Software Inc., a Beaverton, Ore., company that helped with the redesign.

Travel agents are finding they need to adjust as the Internet allows consumers to do more research on travel pricing and destinations — tasks once left largely to specialists.

Nancy Zerbick, owner of All Destinations Travel Inc. in Cherry Hill, N.J., decided a year and a half ago to close her storefront shop and move her business online. She's predicting \$10 million in sales this year.

Zerbick said she expects there will be fewer travel agents in the future but that some can succeed by specializing in niche markets — her agency's specialties are the Caribbean, spas and honeymoon — and by offering personalized services. ■

Computerworld senior editor Sharon Macilis contributed to this report.



BRITISH AIRWAYS
DAVID TAYLOR
Agencies turning to fee-based services



NANCY ZERBICK
Predicts \$10M in online travel sales

British Airways Plans for Volume Ticket Sales

More online revenue sought to cut Web costs

BY SHARON MACILIS
MONTE CARLO MONACO

British Airways PLC currently sells less than 1% of its tickets over the Internet. But top executives are hoping that fully half of all sales will be booked on the Web by 2003 — and is investing tens of millions of dollars on IT infrastructure, marketing and related expenses.

"We expect travel to be the No. 1 consumer market online in 1999," said Julia Groves, manager of digital channels at the London-based airline.

During the Airlines@Internet99 conference here last

week, several major airlines outlined plans to boost their Web presence. All, however, cautioned that selling online is neither easy nor cheap.

"I am not telling you what my cost of sales is, but it's not pretty," Groves said.

But those expenses should decline as volumes rise, she said at the conference, which was sponsored by International Air Transport Association.

Compagnie Nationale Air France, based in Roissy, France, plans to begin selling tickets on the Web before the summer, said Antoine deKerviler, man-

ager of electronic commerce. However, "the Internet will increase our distribution costs" compared with the airline's existing electronic channel in France, called Minitel, which has about 15 million subscribers in France.

Under the Minitel model, subscribers pay roughly 21 to 38 cents per minute for connect time, which is split between the French telecommunications ministry and the merchant whose server is being used.

Overall, Air



JULIA GROVES
Travel will be No. 1 online market in '99

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BRIEFS

Encryption Repeal
Passes First Step

A bill lifting restrictions on encryption unanimously passed a House subcommittee last week. The bill would let companies sell encryption software using 56-bit or larger keys if the developer can show an equivalent foreign product is available.

AT&T, Lucent Sued

A New York law firm has launched a class-action lawsuit against AT&T Corp. and Lucent Technologies Inc. claiming that the companies sold equipment they knew would cause problems when the cellular flip to 2000. A Lucent spokeswoman said the charges are groundless.

Amazon Countersues
Wal-Mart Over IT

Amazon.com Inc. countersued Wal-Mart Stores Inc. last week, asking a Washington state court to dismiss Wal-Mart's suit and award damages if the retailer's actions are found to injure Amazon. Wal-Mart sued Amazon last year alleging it was stealing trade secrets by hiring 10 former Wal-Mart IT staffers with knowledge of Wal-Mart's data warehousing and merchandising systems.

Motorola Sues Intel
Over Chip Talent

Motorola Inc. claims in a lawsuit filed in Texas that Intel Corp. gained improper access to trade secrets when it hired Mark McDermott, head of a PowerPC processor design center, and 15 other former Motorola staffers. Intel hired McDermott last fall to head up a center developing a system-on-a-chip design.

Short Takes

NETSCAPE COMMUNICATIONS CORP. in Mountain View, Calif., last week released Communicator 4.51, an updated version of its Internet mail and Web browsing client. . . . Because of Red revision, French telecommunications equipment giant ALCATEL SA will need 12,000 jobs in the next two years.

GM ESCALATES ITS Y2K
PREPAREDNESS EFFORTS

No. 1 automaker expects to spend
\$710 million to \$780 million on tests

BY BOB WALLACE

GENERAL MOTORS Corp. last week confirmed it has been escalating its year 2000 preparedness efforts as part of a project the world's largest automaker estimates will cost between \$710 million and \$780 million.

GM, which plans to create an unspecified number of year 2000 command centers in Detroit and various international facilities, has begun testing without major incident at its plants and has started work on contingency planning. But the automaker said it has no plans to freeze or lock down any non-year-2000 information technology projects. GM has hundreds of employees dedicated to its year 2000 efforts.

Focus on Testing

"Last year, we focused on remediation, and 1999 will predominantly be for readiness testing, where we run items in their overall environment and make sure everything runs together," said GM spokesman John Ahearn.

Detroit-based Deloitte Consulting LLP partner Joe Bione gave automakers high marks, although he wouldn't say how GM ranks in dealing with year 2000 as compared with its competitors. "The auto industry has led the year 2000 effort, and GM is part of an overall and global program that's at the forefront of Y2K," he said.

GM is taking recommended steps, such as putting together contingency plans and setting up centers to deal with problems, Bione said. That way, "when things happen, you can get the information to one location and figure out how to deal with it," he said.

The automaker kicked off its plant-testing effort in January when it rolled its own and key suppliers' clocks ahead during production at its Lake Orion, Mich., assembly plant. "There

were a few five-minute glitches, but then things went normally," Ahearn said. No problems were reported when the same test was run soon after at GM's Arlington, Texas, assembly plant, he added.

GM said in a Securities and Exchange Commission filing that it "currently believes that the most reasonable likely worst case scenario is that there will be some localized disruption of systems that will affect individual business processes, facilities or suppliers for a short time rather than systemic or long-term problems affecting its business

operations as a whole."

Although specific contingency plans won't be put in place until midyear, GM may deploy emergency response teams on a regional or local basis and develop plans for the allocation, stockpiling or re-sourcing of "components and materials that may be critical to our continued production," the automaker said. ■

Nike Hands IT Chores to Lockheed Martin

BY KATHLEEN MELYURA

Nike Inc., the \$93 billion Beaverton, Ore., sports shoe giant, has signed a five-year agreement with Lockheed Martin Integrated Business Solutions Co. (IBS) in Bethesda, Md., to outsource its data center, desktop support, network management and technical asset management operations.

About 180 of the company's 1,300 information technology workers are expected to move

to IBS. The rest will continue to develop and support electronic-commerce systems and other strategic business applications that aren't included in the outsourcing deal.

Nike CIO Ken Harris said the agreement will enable the company to concentrate on its core competency in sports products, maintain leading-edge IT services through IBS and focus internally on "the sweet spot" of IT value to

Nike: supporting strategic initiatives such as supply-chain management, electronic commerce and knowledge management. He declined to specify the terms of the outsourcing deal.

The move should improve Nike's bottom line, said Faye Landes, an analyst at Thomas Weiss Partners in New York. "The agreement shouldn't impact Nike's year 2000 preparations," Harris said. ■

DC Notes: IRS Tests for Y2K, Funds for Net Boost on Tap

WASHINGTON

■ The Internal Revenue Service plans to continue mid- and end testing of its systems through mid-December for year 2000 problems. It's a tight schedule, but Revenue Service, the assistant commissioner for product assurance at the tax agency, says the IRS has little choice. The programs have to be updated with annual tax law changes, she said.

She said the IRS's testing program is well under way, with 300 employees working on it. During the summer, the IRS will test all of the programs that will go into production Jan. 1. That will be followed by a final test of the total infrastructure, she said. The IRS testing work is kept separate from production systems processing tax returns, she said.

The U.S. General Accounting Office, in a recent report, said the IRS is behind schedule in its year 2000 work. It said the testing was both "unprecedented" and critical for determining the IRS's year 2000 readiness.

■ Some \$22 million that has been set aside in a fund to improve the performance of the Internet could disappear under a bill moving for a full House vote next month.

The money that went into that fund came from domain name registration fees. But a federal judge last year ruled that the fee, which was collected by Network Solutions Inc. under the aegis of the National Science

Foundation (NSF), was an illegal tax.

Congress last year approved a provision that would allow the NSF to keep the fee. But a bill, called the Home Page Tax Repeal Act, introduced by Rep. Terry Lee (R-Neb.), would refund the money to domain name registrants. Following last year's court ruling, domain name registration fees were reduced from \$100 to \$70.

■ The U.S. Federal Trade Commission, in concert with several other federal agencies, took legal action last week against 33 illegal pyramid schemes. One settlement required organizers to pay back \$2 million to some 30,000 participants.

■ Bushmen travelers planning international travel after the new year may want to check with the U.S. State Department. The department is compiling information on the year 2000 readiness of nations worldwide and intends to issue periodic updates.

The agency is also examining the safety of nuclear reactors in the former Soviet Union. U.S. government agencies are "preparing for possible consequences of a Y2K failure at a nuclear plant or, more likely, in the electric grid to which it is connected," said Bonnie Cohen, an undersecretary of state, at a March 5 Senate hearing.

— Patrick Heffernan

IF YOUR BUSINESS' NEEDS EXCEED
THAT OF YOUR INTERNET SERVICE, THERE ARE
ALWAYS OTHER WAYS OF COMMUNICATING.

UUNET

Continued from page 1

SAP Payoff Data

enterprise resource planning (ERP) applications could use the pool of ROI data to better gauge the potential benefits of installing R/3 before committing to investing millions of dollars in a project, the sources said. And users who already have R/3 are supposed to be able to get more detailed measurements of its computing impact on key business metrics such as inventory turns and product cycle times. They then could look at how they're doing compared with similar companies.

The difficulty of getting that kind of data now "is killing me," said Andy Hafer, director of information management at fertilizer maker Hydro Agri North America Inc. in Tampa, Fla. Like many ERP users who needed to fix year 2000 prob-

lems or put different business units on a common system, Hydro Agri didn't perform detailed ROI studies before deciding to install R/3 six years ago.

"But I'm getting more pressure now to justify both the past investments and anything we do going forward [with R/3]," Hafer said. "I'm spending a heck of a lot of time focusing on that."

Hafer asked SAP for ROI information two years ago, but he said all it had to offer them were "some glossy brochures and very generic" data. "He's now working with a Tampa-area consultant to develop a way to better assess what R/3 has done for

Hydro Agri's business units. Bell Canada is another big R/3 user wrestling with the same issue as it prepares to go live next month with SAP's finance and project management applications.

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Hydro Agri's business units. Bell Canada is another big R/3 user wrestling with the same issue as it prepares to go live next month with SAP's finance and project management applications.

"We're constantly being asked by our management to validate and justify the investment we're making," said Frank Barfuss, a business project manager at the Montreal-based telephone company. But the project team still is working out how to measure R/3's impact, he said.

Getting ROI data and linking it to R/3 use "isn't always a straightforward exercise" if you try to go beyond obvious benefits such as head-count reductions and the elimination of incompatible mainframe applications, Barfuss added.

Show Me the Numbers

ERP vendors as a whole haven't had much hard-and-fast ROI data to show users, said Jim Holmbeck, an analyst at Giga Information Group Inc. in Cambridge, Mass. But that's becoming more important now that year 2000 fixes are vanishing as an easy way to justify an ERP project, Holmbeck said.

"There's going to be increased scrutiny put on the business cases for these investments because that burning issue isn't there anymore," Holmbeck said.

Out of 62 companies sur-

veyed recently by Benchmarking Partners Inc. in Cambridge, Mass., about 75% did up-front ROI calculations before installing ERP systems. But many users have said getting a complete picture of the actual financial benefit isn't easy.

One big unknown is whether SAP will charge users for any part of the ValueSAP program. SAP declined to comment on its plans, but financial analysts who met last week with officials from the German vendor said ValueSAP was mentioned as a key new initiative.

Cindy Bernstein, vice president of sales and marketing at the U.S. subsidiary of IMG Corp., confirmed that the Swiss consulting firm is working with SAP on ValueSAP. The program is being piloted at two user sites in Europe and Asia, she said.

IMG has developed tools that extract business performance data from R/3 systems,

Bernstein said. The ROI database, maintained by IMG and the University of St. Gallen in Switzerland, currently has information from about 100 business units at 30 companies, primarily in the chemical and pharmaceutical industries.

That kind of information sounds useful "in spades," said Michael Cromar, chief financial officer at GATX Capital Corp., a San Francisco-based asset management firm that uses R/3. "I'm surprised that [vendors] haven't done a better job of this."

Much of the ROI that companies can get from ERP systems such as R/3 depends on how they manage the software and their business after the installation work is finished, Cromar said. ■

MOREONLINE

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MICROSOFT CIRDS FOR LONG BATTLE

Plans for antitrust case not affected by Intel settlement; trial to resume in April

BY PATRICK THORNDIKE
Washington Post

INTEL CORP.'S settlement isn't producing a change of heart for Microsoft Corp. Instead, the company appears to be on a six-week recess and is due to resume in mid-April, still has a long way to go.

An internal 11-page company memorandum distributed to Microsoft managers and widely leaked to the press last week argued the company's case and indicated Microsoft is resigned to a protracted court battle defending itself against the Department of Justice's lawsuit. The case is "likely to continue" for some time, the memo said.

A Microsoft spokeswoman said last week that the compa-

ny was neither preparing for an appeal nor seeking a settlement. A source from one of the states party to the antitrust suit also denied settlement talks.

But the antitrust trial, which is on a six-week recess and is due to resume in mid-April, still has a long way to go. Daniel Wall, an attorney at McCutchen, Doyle, Brown and Erickson LLP in San Francisco, said favorable press coverage probably has given court attorneys "feeling pretty bullish about themselves," which makes this a bad time for Microsoft to settle.

Justice Department officials couldn't be reached for comment.

William Kovacic, a visiting professor of antitrust law at George Washington University in Washington, said if Microsoft were to settle, it would be before Judge Thomas F. Field Jackson pronounces his verdict. Once Jackson issues his findings, private parties may be able to use them in litigation against Microsoft. But Kovacic believes a settlement is remote.

A published story hinting at a settlement last week helped push Microsoft's stock up by a few dollars. But William Kurtz, an analyst at H.G. Wellington in New York, said Microsoft's stock may be staying in the \$60 neighborhood because of the chance the company will be broken up. If the company is ordered broken up, it will be worth more to stockholders, he said. "So you can't lose."

Cabletron

Continued from page 1

LAN devices. "It will take fewer network administrators to accomplish more management activities in a lot less time," said Laura Dileo, an analyst at Giga Information Group Inc. in Cambridge, Mass. "And all this will result in cost reductions for IT departments."

Cabletron's directory strategy has kept one of its large users from leaving the supplier and moving to Cisco Systems Inc.

"It played a very large role in our decision to stay, because we're looking at leveraging directory technology to gain more control over administration and spend less time with equipment," said Stuart Franklin, information technology manager at Covington & Burling, a Washington law firm. He said he believes his project can be done sooner because Cabletron will deliver before Cisco. Franklin oversees a world-wide network with more than 1,000 users and considers it a must that NDS be able to con-

trol networking hardware. An NDS/Cabletron combination would let the five-person support staff at Atlanta Gas Light Resources provide a higher level of service for its 56-site, 3,000-user data network.

"This would enable us to integrate the support and management of our entire network from applications all the way down to networking hardware, which would speed our responsiveness in fixing and maintaining the network," said Mark Edwards, senior data communications analyst at the Atlanta-based utility holding company. "It would also help us maintain appli-

cation [performance]."

Cabletron also stands to gain. Cisco has cast its lot with Microsoft Corp. by licensing Microsoft's Active Directory, which isn't due until next year, leaving open the window of opportunity for smaller rivals such as Cabletron.

Officials at Novell, Netscape and Cabletron declined comment. ■

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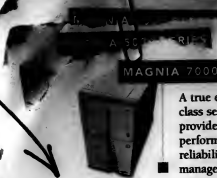


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MAVERICK INTRANETS A CHALLENGE FOR IT

Goal is to keep 'Wild West' in-house sites updated, maintained and secure

BY CAROL BLUM

SEND A SNIFTER OUT ON the network of a large corporation and you may discover dozens, maybe hundreds, even thousands of baby "intranets" in various nooks and crannies of the organization.

The Boeing Co. in Seattle, for example, discovered more than 1 million pages hosted by at least 2,300 major intranet sites on more than 1,000 Web servers. And there could be even more intranet sites, company officials acknowledged.

Intranets have sprouted like weeds in many corporations, which isn't surprising because they're reasonably cheap and easy to set up. But some of those fly-by-night intranets grow up unsupported by the information technology department and hidden from management's view.

Gette Phifer, an analyst at Gartner Group Inc. in Plano, Texas, calls this semichotic

state of affairs the "Wild West intranet." Companies face a balancing act in trying to rein in the intranets while leaving employees enough freedom to meet their business needs.

Light Touch

Too much control can dampen the entrepreneurial spirit that made the intranets grow and thrive in the first place, IT managers said. "This is a technology that doesn't need to be burdened by a lot of centralized control," said David Laube, CIO at Denver-based US West Inc.

Left unchecked, however, unsupported intranets can give company officials a headache.

Boeing, for instance, was happy that an industrious employee had built a corporate "Boeing Look Up Everything Site" or BLUES. Colleagues had grown to depend on it. But when the employee left Boeing for another job, the company had to find a new owner to

tend the orphaned site.

State content can be another problem. A major company reorganization, for instance, wasn't reflected on every intranet page at Charles Schwab & Co., so some employees got incorrect information.

Inappropriate content for a business-oriented intranet—whether a personal page, offensive information or sensitive company data—is another persistent concern among companies with loosely controlled intranets.

"You wind up with some aberrations, and the fear is that the aberrations are going to be the matrix, and that scares you to death," said Grace Jordan, Web program manager at Boeing.

But Jordan has found that the vast majority of employees stick to the Boeing guidelines that govern proprietary information in any format. Not wanting to send a "chill factor" through the employee ranks, Boeing prefers to deal with wayward sites quietly, Jordan said.

"We try not to condemn the 99.9%," he said. "For the weirdness of one or two."

Some intranet issues, however, merit more aggressive attention. Gartner Group predicts that by next year, 80% of companies that don't have policies and guidelines for their intranets will suffer some loss of important data and encounter one or more breaches of internal security.

"There are Web servers sitting under somebody's desk in a lot of cases. You kick the power switch, the Web server goes down, and the information that the department needs is unavailable," Phifer said.

Some companies, including Boeing, are taking the carrot-and-stick approach. Users gain exposure and the benefits of the company's intranet search engine if they choose to register their sites through the Boeing technical library. The company, in turn, can more easily support their sites, verify their authenticity and check for broken links.

At US West, any sites deemed critical to the business must conform to company standards to be included on its Global Village home page. That means using a designated set of servers, conforming to design requirements and carrying the site creator's contact



US WEST CIO DAVID LAUBE notes the company's 600 intranets for network capacity planning

information.

For capacity planning purposes, US West audits its 600 sites to monitor network activity and track growth rates. "It's our obligation in the IT shop that we keep the central tool of the business up and functioning properly," Laube noted.

"It's still like the Wild West," he said, "but the deputy is now in town."

Natural Selection

But US West has no plans to stanch together its grassroots sites "unless there's a compelling reason to do so," Laube said. He said he prefers to let the evolutionary migration process take place for the sites that carry the most value.

The company's next project is figuring out what corporate data is on the sites, so it can decide if it wants to label sensitive content "US West confidential" or place it inside password-protected sites.

Charles Schwab, which has close to 100 Web servers discharging intranet content, plans to take an extra step: Get as many sites as possible to use a new, structured content-management system. "More and more will migrate as people see the benefits of this," said Tom Volta, managing director of the San Francisco brokerage's intranet services.

Schwab also is migrating to a Web farm of servers and related services. Users who choose to host their intranet sites through the Web farm will get a more reliable site because the IT department will worry about load balancing and redundant hardware. IT staffers, meanwhile, will be able to enforce technology standards.

Consultants and analysts agreed that some level of central IT department control is needed to ensure the intranet stays up and running, security policies are maintained and content is managed. But where a company fits on that chaos-to-control spectrum may depend on its needs, stage of intranet development and corporate culture.

"First, people let them grow at will. And then they're trying to overlay an infrastructure that makes them more powerful," said Mid Walsh, vice president of consulting at Computer Sciences Corp.'s e-Business group in Natick, Mass.

For companies just getting started with intranets, that could mean adding a front-end search engine requiring page design templates or building a centralized intranet portal that provides structure and navigational aids. Companies that already have portals can add a more sophisticated search tool or content-management system or try to bring more grassroots sites into the fold.

Eric Brown, an analyst at Forrester Research Inc. in Cambridge, Mass., said having a portal "is the new bar that defines what an intranet is."

"It's not sufficient to just have a bunch of [intranet] Web sites and browsers," he said. "It's not an intranet until I have some unifying force that pulls all of these things together into something that's usable."

However, several intranet managers said they don't like to link every site to the main portal page, because some departmental sites may be useful only to small groups of people. And consolidation will inevitably face turf battles. "The single biggest challenge in this kind of project," Walsh said, "is to achieve organizational consensus to bring unity to all of the different intranets." ■

How to tame a Wild West intranet

Establish an intranet protocol group with representatives from the primary business units, the corporate IT department and corporate communications staff.

Understand short- and long-term goals of the enterprise intranet.

Identify target applications, such as synchronous and asynchronous collaboration, messaging, document management and workflow.

Identify who will access the intranet, keeping in mind that trading partners and customers eventually may access selected portions of the intranet via an extranet.

Develop policies, procedures, standards and guidelines for creating, publishing and managing content.

Identify mission-critical resources on the intranet and treat them appropriately.

Use systems/network management tools to provide a more stable environment.

Serve for balance. If users perceive that the central IT department is overly restraining them, they will revolt.

SOURCE: GARTNER GROUP INC., CAMBRIDGE, MASS.; PHILIP J. STARK

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Helmet

Light

EXPORTING JOBS SAVES IT MONEY

U.S. firms buy in to innovative approach to labor, visa crunch

BY JULIA KING

INDEA, Ireland, Israel, Barbados, Bulgaria... More U.S. companies are shipping more software projects to these and other offshore sites in the ongoing scramble to beat information technology skills shortages, visa caps and ever-rising labor costs.

In the past year, U.S. IT projects shipped to India alone ballooned by almost 60%, according to India's National Association of Software Service Companies. That represents nearly 200,000 jobs and will account for a software export market of about \$4 billion by year's end.

And it's not just C++ and COBOL code. Mission-critical projects ranging from real-time stock trading applications to electronic-commerce systems are moving offshore to third-party service providers and new software development facilities established abroad by U.S. companies.

One big reason is it's a lot cheaper.

In example, software teams with a ratio of 25 on-site workers to 75 workers offshore in India can expect to pay a blended hourly labor rate of about \$37, compared with an average rate of \$75 to \$100 for an all-U.S. team, according to Chris Kizzier, an offshore outsourcing consultant in Portland, Ore.

Other big factors contributing in the offshore boom include the ever-increasing speed and reliability of communications technology and better project-management discipline.

It's a Small World

"With advancements in communications and the Internet, the world has shrunk down to the size of a pea, and the fact that you might be 9,000 miles away is irrelevant once you put the right project management disciplines in place," Kizzier said.

In the past 15 months, five

U.S. companies, including Boston-based Liberty Mutual Insurance Co., have opened IT research and development centers in and around Belfast, Ireland. So far, Liberty Mutual has hired 60 Irish software developers — all of whom get at least six months of training at Liberty's offices in the U.S. — to work on C++ and Java-based applications, among others.

"There's definitely a [labor] cost savings, plus there are tax incentives [for locating] in Ireland," said Chris Gravel, U.S. operations manager at Liberty's Belfast-based software center.

Meanwhile, Guy Carpenter & Co., a \$450 million New York reinsurance company, has outsourced development of a Web-based insurance brokerage system to PRT Group Ltd., which operates out of a 35,000-square-foot development center in Bridgetown, Barbados

(see story below).

"We have half the team on-site and half the people in Barbados," said John Gnipper, CIO at Guy Carpenter. The two groups are connected via a T1



Sun and Pay Lure Coders To Barbados Outsourcer

Islanders get training, jobs and investment

BY JULIA KING

BRIDGETOWN, BARBADOS

Just a short stroll from a sun-drenched, white-sand Caribbean beach is a 35,000-square-foot software development center staffed by about 200 IT workers from India, Jamaica, Malaysia, the U.K. and elsewhere around the globe.

They work on software development and maintenance projects for U.S. clients, including J.P. Morgan & Co. and Prudential Insurance Company of America, which have both invested in the company, and Travelers Corp. and Pfizer Inc.

Workers' annual salaries range from \$30,000 for a programmer to about \$100,000 for

a senior project manager. Their perks include a rent-free apartment or house, regular mail service and free door-to-door transportation to and from work each day.

It's close, but it isn't Shangri-la. It's PRT Group Ltd., a unique "near-shore" outsourcing facility for customers unwilling to ship information technology projects as far away as India or China.

It's already paying off for Guy Carpenter, which said J.P. Morgan has benefited from significant cuts in application development time and cost.

The brainchild of Doug Mellinger, PRT's thirty-something CEO, the Barbados development center was

communications link, and Barbados is a four-hour flight from New York.

With this kind of project management and communications in place, "there's very little difference in executing a project on the other side of the world vs. executing it on the other side of the street," Kizzier said.

That can even include the software developers.

Global Advance Inc., an offshore services company in Jerusalem, employs U.S. expatriates exclusively to work on

projects outsourced to Global by U.S. companies. Its customers are primarily small and midsize companies, including Waxman Securities Inc., a privately held investment firm in West Hempstead, N.Y., and Leg Inc., a Reading, Pa.-based candy and toy company.

Home Away From Home

Global's policy of hiring U.S. expatriates means U.S. companies like Baltimore-based Wendell Textiles Inc. have access to skilled, English-speaking IT workers who are knowledgeable about U.S. business practices, but whose labor costs about 30% less than U.S.-based developers.

"I like the fact that there are Americans working on the projects because I think this whole thing is about communication," said company president Scott Wendell, who is in the process of choosing an offshore outsourcer.

"You have cultural differences and other things that come into play when you're trying to describe any business process," Wendell said. "Most of the people [Global employs] over there are replanted from New York [land] worked in financial markets or other sectors in the U.S." ■

launched after Mellinger had problems persuading executives to send IT work to another PRT offshore site in India.

"We started a search around the world for a place that would put us in the same time zone as the U.S., had a world-class [communications] infrastructure, had English as a primary language and had government stability," he said.

Other Benefits

What he came up with was Barbados, a 166-square-mile former British colony with a 98% literacy rate, the highest per-capita income in the West Indies and a government willing to offer ultra-competitive tax breaks and unlimited access to work visas and other permits for foreign IT professionals.

In return, PRT provides free training, internships and jobs to Barbadian computer science students and is helping to develop an islandwide IT curriculum for elementary and secondary schools under a seven-year, \$230 million initiative

known as Edutech 2000.

"Our strategy has always been to import brainpower from other parts of the world to help Barbados develop that talent internally," said PRT Barbados President Srinivasan Viswanatha, who is known to everyone simply as "Vishy."

Visly left a highly successful post as head of Citicorp's offshore development center in India to join PRT Barbados in 1995. Eventually, several of his former co-workers from India joined him, as did programmers and software developers like Pamela Alleyne from Malaysia, Stephen Vitoria, a programmer/analyst from England, and Gail Campbell, a team leader from Jamaica.

Now, PRT Barbados is looking to get into the training and Internet application development business, having just signed a partnership agreement with Netscape Communications Corp. Within six months, PRT expects to hire 100 Netscape developers and trainers. ■

TECHNOLOGY BRIEF

Enterprises turn to Aviva product family to address the issue of dynamic change

Automating and simplifying the TCP/IP migration process

Configure once, detect automatically

Many, many corporations are migrating from SNA-centric networks to TCP/IP-based networks (i.e., intranets, extranets and Internet access). But this migration invariably means reworking the entire end-to-end connection paradigm from the desktop to the data center which involves extensive reconfigurations.

In automating the migration process, Aviva Host Connect from Eicon Technology reduces migration costs, facilitates phased migration, and ensures transparent roll back in the event of a connection failure. Host Connect automatically detects the first viable network connection from a set of pre-defined connections, and uses that to establish end-to-end SNA sessions.

Many organizations don't want to migrate their entire user base to a new network scheme overnight. They want to handle such migration in a controlled manner, with certain users, regions or applications being migrated to the new network, and the entire process spread over several months. Aviva Host Connect facilitates and automates such phased migration.

With Host Connect, network administrators can configure a desktop and voice, with all possible networking connections (including those types that have yet to be implemented). In addition, the configurations containing all the pre-defined connection types can be done centrally.

Host Connect's configure once/detect automatically technology provides a perfect migration strategy for corporations moving from SNA-based networking to TCP/IP-centric networks.

Dynamic enterprise software: a parable

As technology vendor develops an innovative solution to a customer's migration of IT, it is well-served and so its profitability throughout this marketplace. Soon competitors appear and add new features and functions to their products. To regain the lead, the original vendor must add even more features. It is a vicious cycle that gets more vicious.

IT departments get bogged down with the incessant evaluation, implementation and upgrade cycles of the new and improved products. Worse, growing disenchanted with the IT department's inability to provide for them in a timely fashion, turn to other avenues for fulfillment, or do for themselves.

In time, duplication of effort and duplication of efforts result rampant throughout the migration. Worse, technologies are implemented piecemeal, and are not compatible with each other. The next step in the progression is obvious. This scenario has repeated itself many times in organizations.

It is this change that necessitated the creation of Host departments. Ironically, few enterprises have developed strategies for addressing change as an issue in its own right. And with change accelerating, today's rapidly changing information technologies can not only retard growth but can also add to the escalating overhead and support costs associated with many host networking projects.

In response to today's dynamic marketplace, vendors must offer dynamic products—products that automatically accommodate a com-

plex change. Many vendors are just now starting to consider and then think about it, but the products do a great job of simply working around their changes.

A dynamic product solution requires a complete change up front. Since there's no time proper way to implement a solution in today's rapidly changing technology environment, a single product simply distributed when implemented, knows in response, needs to be available in different forms. It needs to be presented as a product family, so a customer can move from one version of the family to another as the user's requirements change.

The installed dynamic products must be able to accommodate a seamless change on the fly. For instance, most enterprises are migrating from legacy SNA-centric solutions to a native TCP/IP product. Dynamic host access products should be able to change from one network connection to another to accommodate, painless testing and migration.

As the migration from SNA networks to TCP/IP-based Web enabled networks continues, and automation of legacy and multiplatform environments accelerates, the customer about how to best manage this change will increase dramatically.

Whether it's an end-to-end overhaul of the enterprise or an incremental migration to a new computing environment, one solution is prepared to offer a dynamic product solution for the enterprise in transition. That company is Eicon Technology.

Eicon pours foundation for IBM host access

Eicon Technology, a leader in remote access solutions, has partnered with Atlanta-based SynTellect Interactive Communications Inc., a provider of interactive communications management solutions.

SynTellect will use Eicon's Aviva Web-to-Host access products to enhance its Vista interactive voice response (IVR) servers with IBM host access for large-scale voice application integration. The Vista IVR server is an automated call handling system that provides users with around-the-clock, 365-day-a-year self-service.

The Vista system can host IVR interactive Web response (IWR), computer telephony integration (CTI) and predictive dialing capabilities. Based on an open, industry-standard architecture, it allows users to call into institutions such as banks and insurance companies to access information by keying in data from their phone or Web browser.

Aviva software allows the Vista platform to query customers' mainframes, retrieve the desired information and report results via voice response back to the caller. Eicon's Web-to-Host Server product provides basic IBM host access solutions through a number of connections, including SQLC, Token Ring and TAC250.

"The Aviva Web-to-Host Server product provides the tools that will enable us to reduce our workload and the time required to quickly create integrated solutions for our customers," said Trevor Lester, VP of product marketing for SynTellect. "For example, we use it as a foundation upon which we have built our IBM host access."

Eicon Technology (www.eicon.com) develops hardware and software products for connecting network servers and desktop and notebook PCs to corporate networks, host computers and the Internet.



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Where: Chicago Marriott Downtown

Register at
1-800-80EICON #5400
or www.eicon.com/chicago

Anura Gunge is considered by many the father of today's web-to-host architectures. He has designed many of the SNA-related features found in today's bridges, routers and gateways. This free seminar, sponsored by Eicon Technology, is a "must-attend" for administrators, managers and CIOs of 3270/5250 environments integrating the web and eCommerce.

Joining Anura will be representatives from ASAP Software Express to discuss "best practice" volume license management and electronic software distribution.

Both a Continental breakfast and a buffet lunch will be served, and each participant will receive a copy of Anura's book, "Reengineering IBM Networks."

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Novell, Compaq Team Up on Caching Server

BY SHARON SAUDIN

Novell Inc. and Compaq Computer Corp. are working out a deal to jointly build a caching

server to make it easier and cheaper for companies to download Web pages, according to spokesmen for both companies.

The companies confirmed last week that they're wrapping up plans and are slated to make an announcement about

the effort at Novell's annual user conference, BrainShare, in Salt Lake City on March 22.

Novell now offers caching capabilities in its BorderManager software suite for network managers. A company spokesman said the new caching ef-

fort would be for single-use, stand-alone appliances.

The Novell spokesman said the caching appliance would be targeted at companies with many users who frequently download Web pages. Caching enables Web pages to be downloaded and held on the corporate network. That means the next employee who calls up that page won't have to wait for it to be downloaded off the Internet.

The Novell/Compaq team should have the capability to make the caching server "a high-performance product," said Richard Fichera, an analyst at Giga Information Group Inc. in Cambridge, Mass.

In a separate deal related to Web page caching, Intel Corp. licensed its Quick Web caching and compression technology to Sitara Networks Inc. in exchange for an equity stake in the Waltham, Mass., company.

Provo, Utah-based Novell also said it has released a beta version of Novell Directory Services 8.0 and announced a new version of its 32-bit network operating system, NetWare. Both products will be shown at BrainShare along with Novell's upcoming 64-bit operating system, code-named Modesto [C/W, March 8].

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Patch for NT Screen Saver

BY ANN HARRISON

A security hole surfaced last week in the Windows NT operating system that could allow malicious users to elevate their access privileges via a screen saver hack.

The bug exploits a flaw in the winlogon.exe operating system file that triggers the screen saver and sets a user's level of system-access privileges. A cracker with physical access to a workstation could theoretically install a corrupted screen saver and add themselves as a logged-on user to a local network group.

Scott Culp, a security product manager at Microsoft Corp., said the company has received no reports of successful hacks using the security hole. Microsoft will issue a bulletin and a patch for the hole at www.microsoft.com/security and on its product security notification service.

CHANGE IN THE WIND AT SLUMPING ERP VENDORS

PeopleSoft, SAP and others get stung by flat sales after years of rapid growth

BY CRAIG STEMMAN

FLAT SOFTWARE sales are underling in an unprecedented period of turmoil and change for SAP AG and other top vendors of enterprise resource planning (ERP) software.

More evidence arrived last week when PeopleSoft Inc. confirmed that it's looking for a new president to take over day-to-day management of the company from co-founder Dave Duffield.

The 58-year-old Duffield plans to continue as CEO and chairman; PeopleSoft officials said the search started last year before demand for ERP applications began hitting the wall.

But analysts said it's a time of transition for PeopleSoft,

which laid off 6% of its workforce and changed its sales management in recent weeks.

The Pleasanton, Calif., company is also betting heavily on new intranet and business analysis applications to augment its core ERP software.

Sharing the Pain

Rivals such as SAP, Baan Co. and J.D. Edwards & Co. also are feeling the pain of lower-than-expected sales as Asian companies cut spending and users run out of time to solve their year 2000 problems by installing packaged applications (see chart).

For Jim Dilco, senior vice president of worldwide information technology at The MacManus Group, a global advertising firm in New York, the

JUST THE FACTS What's Ailing ERP Vendors

SAP: Profit margins dropped 15% year over year in Q4 1998

Baan: Lost \$250M in Q4 while laying off 20% of its workers

PeopleSoft: Laid off 6% of its staff after profits were basically flat in Q4

J.D. Edwards: Flat sales and lower-than-expected profits in Q4

fact that everyone else is suffering means he won't get too concerned about PeopleSoft—as long as it doesn't slip up on support. "Clearly, there's a market trend out there that's affecting all of the vendors," said Dilco, who's overseeing a PeopleSoft rollout.

But PeopleSoft isn't likely to hire a new president just to come in and be a caretaker; "I don't think we've seen the end of any changes," SAP's U.S. subsidiary has been hit by the departure of several top executives since last fall, including this month's resignation of Jeremy Coote as president of the Newtown Square, Pa., unit.

"You lose relationships, and it's a pain in the rear end to re-

build them" when executives like Coote leave, said Colby Springer, CIO at MIDesigns Inc., an arts and crafts retailer in Coppell, Texas, that uses SAP's R/3 applications.

Otherwise, the turnover at SAP "is no big deal," Springer said. "Obviously, there's some turmoil there. But the software works, and that's the key part."

After SAP officials met with financial analysts last week, New York-based Credit Suisse First Boston Corp. (CSFB) cut its first-quarter revenue and earnings projections for the German vendor.

Sales Drop Expected

CSFB predicted that SAP's software license sales will drop 13% this quarter and fall another 6% in the second quarter before rebounding modestly later in the year.

But new applications such as front-office software and supply-chain planning tools are the keys to renewed prosperity. SAP and its rivals, said Josh Greenbaum, an independent analyst in Berkeley, Calif.

For users as well as vendors, "the strategic value of ERP is diminishing," he said. "It's now just something that gets you in the game." ▀

BRIEFS

Industry Group Seeks Antitrust Fund Cap

The Computing Technology Industry Association, a trade group in Arlington, Va., has asked the Senate Appropriations Committee to reject the U.S. Justice Department's request for a 15% increase in funding. The department wants about \$18.1 million to hire an additional 124 workers in the antitrust division. The group criticized the recent antitrust investigations of Microsoft Corp. and Cisco Systems Inc., as well as that of the proposed merger of America Online Inc. and Netscape Communications Corp.

Short Takes

SUN MICROSYSTEMS INC. and **SYBASE INC.** are planning to develop products and services intended to speed development of Java-based Internet access devices for consumers and mobile workers. ... **ORACLE CORP.** has acquired **E-TRAVEL INC.**, which makes software to plan and book corporate travel using a Web browser. Oracle will integrate the software with its own travel-reimbursement software. ... **LYCOS INC.** board member David Wertheim has resigned in protest of Lycos' proposed acquisition by USA Networks Inc. Wertheim is CEO of CMGI Inc., a major Lycos shareholder.

AMD Forecasts Large Loss

Chip maker to trim workforce by 300

BY JAMES NICOLAI

Advanced Micro Devices Inc., a chip maker that recently overtook Intel Corp. as the top seller of PC processors, said last week that it expects to report a significant loss for its first fiscal quarter and announced plans to lay off 300 workers as part of a restructuring program.

It's the second time in a little more than four weeks that AMD has warned of an expected shortfall for the quarter.

The Sunnyvale, Calif.-based chip maker also said microprocessor shipments for the current quarter will fall short of its goal of 5.5 million by about half a million.

AMD officials acknowledged a manufacturing problem that reduced output in the first eight weeks of the quarter.

Officials said AMD is over the hurdle but still adding the problem dragged down the chip maker's output for the quarter. AMD has also been locked in a pricing battle with Intel.

The layoffs, which will be made during the next two quarters, are part of a restructuring effort aimed at increasing AMD's focus on microprocessors and other circuits related to PCs, the company said in a statement.

AMD has started production wafers on its seventh-generation processor, the AMD-K7, which is scheduled for introduction in June and is meant to compete with Intel's new Pentium III.

AMD's chips are used mainly in consumer-oriented PCs, but some have made their way into low-cost business and notebook systems. ▀

Nicolai is a reporter for the *ITC News Service* in San Francisco.

HP Promises to Ramp Up Internet Efforts

CEO Platt says company will stress services, e-commerce security

BY JAHNIBAR VILAYAN

With a split between its computer and measurement-equipment products now under way (CW, March 8), a major focus of Hewlett-Packard Co.'s computer business going forward will be the Internet, according to HP CEO Lewis Platt.

"HP is widely perceived as having missed the first chapter of the Internet. Revolution," Platt told a recent conference of analysts in New York. "We intend to

put forth a much more integrated and compelling message" in the future. In particular, Palo Alto, Calif.-based HP will focus on providing high-availability services around the



CEO LEWIS PLATT: HP needs "integrated and compelling message"

network management, database and storage technologies as the infrastructure on which corporations run their electronic-commerce applications. HP last week also announced an Internet business unit to tie all of its Web-related software and services into one organization. The unit will focus on delivering electronic-business software, security technologies, customer relationship management software and services for vertical industry segments. ▀

MORE THIS ISSUE

HP unveils tools to help ensure Web services liveli. See page 72.

MARYFRAN JOHNSON

Spring in Novell's step

THEY'RE TOAST, everybody said. History. Hear that bell? It tolls for Novell. That was the prevailing sentiment two years ago, an eternity in today's Internet time. But, fortunately for this once-dominant PC networking vendor, its customers still live in real-world time, where patience sometimes pays off. There's a resurgence of faith in Novell today that no industry pundits predicted and few business partners anticipated. When *Computerworld* surveyed 109 information technology managers recently, a startling 71% expressed solid confidence in Novell's future and 72% said they planned to keep buying its products (CW, March 8). Another 26% were planning to use Novell Directory Services (NDS) with the long-overdue Windows 2000 when it finally arrives — rejecting Microsoft's own Active Directory in favor of NDS.

Novell is benefiting from the escalating importance of network directories, which are destined to be the central place to manage a chaotic lineup of IT resources.

As one IT manager told us: "When it comes down to maintaining the network, user accounts, files and applications, I need NDS for that. That's what saved Novell."

CEO Eric Schmidt certainly did his part.

He dragged the moribund company back into the black through a number of painful-



MARYFRAN JOHNSON is executive editor of *Computerworld*. Contact her at maryfran.johnson@computerworld.com.

but-necessary moves.

Those included more than 1,000 layoffs, senior management upheavals and a wrenching technology shift from the proprietary IPX protocol to a "pure IP" strategy that underscores the certain future of Internet Protocol networks.

Yet as any gardener will tell you, spring can be a dangerously unpredictable season. Microsoft might get its Win 2000 and Active Directory act together one day.

Application vendors might not flock to NDS in sufficient numbers. Directories might end up as commodities, the way file and print servers did. But today, the sun is shining and no bells are tolling for Novell.

For thousands of IT shops, that's cause enough for celebration. ■

BILL LABERIS

The press shouldn't put Gates on trial

TRUE OR FALSE: Bill Gates is on trial in Washington, courtesy of the U.S. Justice Department. If you answered "true," you're wrong. But you can hardly be blamed. The press seems determined to turn this case into U.S. vs. Gates, and in doing so does a grave disservice to the information technology community and everyone involved in the technology purchase process. Just last month, in the space opposite this column (CW, Feb. 22), *Computerworld* Executive Editor Maryfran Johnson invited some comparisons between the trials of Bill Clinton and Bill Gates, referencing "the trials ... of the two Bills."

Therein lies the greatest disservice the press, in general, has done to corporate buyers in the whole Microsoft affair.

Bill Gates is not on trial as Bill Clinton was. Microsoft is on trial.

There's a huge difference.

By putting Bill Gates on trial, the press has tried to highly personalize a business trial, but not before trying to color the target personality as a conniving, scheming, lying cheat.

Consider that much was made in the press about the fact that the lone information technology manager on the witness list was bumped at the last minute for a vendor witness, with the implication that Microsoft pays only lip service to users.

The truth is, that lone IT witness was a government witness bumped by the government, not a Microsoft witness.

Making comparisons between the CEO of the most successful public company on earth to a world leader who had sex with an intern 30 years his junior and then lied to every person and judge about it plays right into this unbending of the real issues in the Microsoft trial.

Instead, the press contributes to trying to get users to focus on personality instead of the law. Obviously, it's easier to throw a mud pie than to research, comprehend and then to clearly explain our very complex body of antitrust statutes.

The negative press isn't dampening IT's enthusiasm for Microsoft.

A report published last month, based on a study of 200 IT managers, showed 89% of them likely to



BILL LABERIS is a consultant in Holliston, Mass., and former editor in chief of *Computerworld*. Contact him at bill@laberis.com.

Veterans of the Antitrust Wars



adopt Microsoft Office 2000 as a standard application platform.

Two-thirds of their servers will run NT or Win 2000 in two years, compared with 14% running Unix.

That's the court that really matters: the people's court of technology purchasing. I would say the users already have rendered a verdict.

It's a verdict based on what works for users today and what they anticipate will work for them in the future.

Users don't look at this government-sponsored mess and then alter purchase decisions based on personalities created by the press. They are much too smart for that. ■

DAVID MOSCHELLA

Fuzzy ad/content boundaries are no big deal on Web

IF YOU GO to the movies and see Tom Cruise drinking a Coke, how do you know whether the moment was captured for art or for money? If Tiger Woods tees up a Titleist, how do you know whether he thinks he's playing the best ball in golf, whether he's contractually obliged to use it, or both? If your airline serves up New Zealand chardonnay, how do you know whether the food services staff wants to bring you the wines of the world or some economic development board from Auckland gave them minibottles for free? These questions

come to mind as I ponder the many recent stories bemoaning the fact that the boundaries between ads and information on the Internet aren't always clear.

Despite the natural urge to concur, I can't avoid the view that we will all have to get used to it. In the physical world, there are a thousand examples of endorsements for sale.

Typically, we don't know or care about the underlying motivations of many of the companies we deal with. Cyberspace never prove to be all that different.

It's hardly surprising that the media shows particular interest in this issue.

Newspaper and magazine professionals understandably take great pride in the fact that, in their world, there is usually (although certainly not always) a wall between the editorial and advertis-

ing processes. It's the prime source of that irritating holier-than-thou attitude journalists sometimes exude.

But there are several reasons why that culture won't become dominant on the Web.

For one thing, the Web isn't primarily about publishing. Sure, publications such as *The Wall Street Journal* and *Computerworld* will likely transfer their traditional values from print to electronic media. But publications account for only a minority share of the Internet advertising business.

When businesses such as booksellers and stockbrokers move to the Web, they too will transfer their traditional values to the new medium — meaning they will instinctively pursue advertising strategies that favor their friends and snub their foes.

Public pressure can temper — but not alter — that reality. More important, the line that determines what is acceptable is still moving, and there is much money to be made by staying as close to the line as possible.

A decade ago, we would have been shocked if TV sports broadcasts superimposed rotating ads behind a baseball batter, but it has become commonplace.

One can hardly blame Internet companies for

testing what the market will, and won't, bear.

The irony is that so-called "crass commercialism" is the inevitable result of the Web's never-pay-for-information culture. We all know that generic banner ads alone aren't enough to support all the information and services we want from the Web.

Only by tying advertising directly to our individual interests can companies justify spending the really big bucks. That means it's actually in our interest to find acceptable ways to use our searches, links and interests to generate relevant marketing materials.

Although it often feels counterintuitive, we should always keep in mind that we are not users of, for example, Yahoo's products — we are Yahoo's product. It's our eyeballs that are being sold to advertisers. Similarly, search and free e-mail services aren't really products.

The products aren't free, but the bait is. And the tastier, the better.

But to complain too much about the nature of the bait or what happens after it's eaten is a bit like feeling sorry for the fish.

You may have a valid moral point, but don't be surprised if the fishermen aren't really listening to you. After all, fishermen are businessmen, not publishers. ■

READERS' LETTERS

'Golden oldies' don't have have it so bad

IFIND IT HARD to sympathize with older IT workers expressing difficulty finding re-employment ("Golden Oldies," CW, Feb. 8). Yes, I am in my 20s, and my view will probably change if I find myself in the same boat 20 years from now.)

A few years ago, I found it almost impossible to find an IT job even though I had solid skills. I was interviewing with some of these "old school" IT managers. Since I was young and had a ponytail, I was quickly discarded as a candidate.

I have since been able to work and consult on some great projects and prove my skills.

Every now and then I see one of these managers who has been downgraded and is now in sales. When they ask if I am interested in such-and-such product for our

networks, I tell them, "No thanks," and make sure they remember the ponytail that I still have.

They wouldn't remove their blinders for me, so I why should I sympathize with them?
Shawn Butten
Senior IS Manager
Downing Thorpe and James
Boulder, Colo
sbutter@tdj.boulder.com

ILL BE ST in a couple of weeks and I am overemployed. I have enough projects to keep two or three people busy. Why? Because I study.

I spend my own money on books, software and equipment to improve my skills.

I am a chase fad, but I do try to tap major trends. However, I am not an employee and have no desire to be one.

I am a consultant employed through a consulting firm.

Am I expensive? Yes.

Am I worth it? Apparently — I have been on my primary assignment for more than a year.

I also do little jobs on the side, for which I charge a higher rate.

Younger people with finely polished client/server skills should be wary.

Client/server was yesterday's hot trend.
Steve Howland
Walnut Creek, Calif
74270.765@compuserve.com

We need more Y2K data, less speculation

AS A SYSTEMS professional, I've read with interest the letters and columns in *Computerworld* concerning the potential for year 2000 problems. While the tone has been the gamut from nonchalant to doomsayer, there is one common aspect: They are all speculative. It would be interesting to me if *Computerworld* would poll the major

organizations that have already done considerable corrective work on their systems to find out how many bullets have been dodged as a result of their effort. I would be especially interested in hearing about faulty date logic that could have caused significant problems if left undiscovered.

With this information, we might be able to come to some informed conclusions about how much danger really exists and where to focus our search for problems.

Edward A. Forbes
Honey Brook, Pa
HoneyA.Forbes@vaquard.com

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to MaryAnn Johnson, Executive Editor, *Computerworld*, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8621. Internet: letters@computerworld.com. Please include an address and phone number for verification.



DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at dmoschella@tdj.com.

HELEN PUKSZTA

Have courage to go beyond immediate business needs

ONE ADMONITION that relentlessly resurfaces in IT conferences and publications is that we should never pursue technologies that don't have a clear connection to business requirements. On the surface, this sounds anywhere from platitudinal to sensible. In reality, putting this statement into practice can be like putting blinders on IT vision. To align business and IT, we're told to get IT so close to the business that we will hear and react only to what the business



HELEN PUKSZTA is a consultant in Chicago specializing in IT strategy and management. Contact her at helen@pukszta.net.

itself tells us. We're told to banish those "elegant technologies in search of business problems" and to follow what the business strategy unfolds as the right technology path. These pronouncements can turn into misguided advice as they don't consider the possibility that it's OK to look for business problems to match a promising technology.

New technological developments rarely find

us with a well-formed understanding of their potential or with strategies that incorporate them. No one knew exactly how the telephone would change our lives at the time it was invented. Industry pundits decades ago made predictions about demand for computers that turned out to be plain wrong. And in recent history, few had foreseen the impact the Internet would have on businesses.

It's not easy to identify a business need demanding a technological innovation because, until the innovation becomes a commonplace reality or has been adopted by competitors, the business gets by just fine without it. So expecting business requirements to point conveniently to a new technology is hardly realistic.

Before the advent of the Internet, eliminating distribution channels to establish direct links with customers wasn't a viable option for many industries. Yet today few organizations can afford not to pose the question of how their distribution — indeed, their business model — can be changed with the help of the Internet.

Even fewer can ignore the question of how their competitors will react to the nascent opportunities. Here, the Internet technology with its multitude of solutions has indeed been looking for business problems to solve. In defiance of

popular wisdom, the new business requirements haven't been conceived independently of, but in direct response to, this new technology.

After a conference or two, you may be tempted to stamp out the tendency of programmers to pursue hot and fun technologies with seemingly little relevance to your business needs. But before you do that, keep in mind that small-scale experimentation with new technologies can pay off with new insights and new uses of IT that not only your company but also your competitors may not have considered before. The key is to have an open mind and the creativity to see the possibilities and to sell them to the business at the right moment.

Many of the celebrated competitive-advantage implementations started out on a small scale as bottom-up efforts and only later — often to everyone's surprise — blossomed into strategic systems.

I'm not advocating overengineered, unstable or irrelevant solutions — in the end, whatever you build had better deliver business value. But to decide effectively what might produce that value is to walk a fine line between technological complacency and experimentation and between following the business and leading it to new opportunities. ■

JOHN GANTZ

With Jini, what happens if we get our wish?

BY NOW you should know about

Jini. It's Sun Microsystems' dramatic follow-on to Java, announced officially in January. What makes it dramatic is its potential for spectacular success or spectacular failure. I doubt there's any room in between.

The brainchild of Sun founder Bill Joy, Jini is software that sits on top of Java virtual machines and essentially lets any platform under it automatically announce itself to the Internet (or intranet) and make itself available for use.

Devices and applications use a process known as "discovery" to register with the network, then place themselves in a "lookup" service and become available to other network users under terms defined by their owners. When a device joins the network, it's on for only a certain length of time, after which it's removed.



JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at jgantz@idc.com.

In Sun's vision, every device on the planet has a Java virtual machine in it, and Jini is the glue tying them all together. A number of vendors — including router manufacturers, PC companies, personal digital assistant manufacturers, software companies and cell-phone companies — are licensing the technology. Noticeably absent is Microsoft.

This is plug-and-play for cyberspace. With Jini, the Internet itself becomes the computer, or at least a LAN.

I like the idea. All the network at your beck and call. No cumbersome installation procedures. No need to store a thousand drivers on your system in case you might someday add a printer or graphics board. Resource sharing.

But will it work?

I've run the technology through the same evaluation model my company uses to test the commercial viability of other emerging technologies and found the "brass ring" scenario (wild success for Sun) for Jini is only a little more likely than the "black hole" scenario (a terrible waste of R&D funds).

And I don't know which scenario would be worse for IT professionals.

If Sun is not successful, we may be locked in to successive generations of ever more complex Microsoft operating systems all trying to coexist with a cyberspace that is expanding faster than the real universe. In an ideal world, we would be computing using software, objects and data that are kept in cyberspace rather than on our hard drives and servers and downloaded only when we need them. Because this is a tough assignment for the Microsoft architecture, in this scenario we waste a lot of the potential of cyberspace.

But if Sun is successful, we have another problem. Let's say Jini is a smashing success and we can set up ad hoc networks without network administrators: our LANS extend to the farthest corners of the earth; and we can communicate with not only our PalmPilots and Nokia phones, but also our refrigerators and sump pumps.

Jezebel crow, how do we deal with that? How do we know what capacity to plan for on the Jini devices we put on the Net? How do we make sure we are in the right ad hoc Jini networks at the right time? How do we know which devices and applications will show up in the discovery registers when?

Will all of Jini computing become a continual online scrounge for available resources? If we can build applications using bits and pieces pulled down from Jini nets (or accessed in place), what happens to those years of training in waterfall design, structured programming and rapid application development? Do we uninstall all the software we bought to help us make NT run better? Do we have jobs?

Jini could change computing as we know it. It's more revolutionary than the LAN, which changed computing quite a bit, and once it's out of the bottle, it won't go back in. It's one of those technologies that truly could be beneficial — but confounding at the same time.

Guess we'll have to wait and see. ■

ARE YOU GETTING WHAT YOU NEED FROM YOUR NETWORK OPERATING SYSTEM?



*Productivity
soars when an
OS goes
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services*

ARE YOU GETTING WHAT YOU NEED FROM YOUR NETWORK OPERATING SYSTEM?

Productivity soars when an OS goes beyond the basics and includes the full range of networking services

Snapper Inc., a midsize manufacturer that produces 120 different lawn products from its plant in McDonough, Ga., knows IT operating systems. It has experience with the IBM AS/400s, Novell NetWare, and Microsoft® Windows NT® Server. But when it came time to determine a platform for a critical sales force automation  application that needed to integrate with a wide range of back-end systems, the company chose Windows NT Server without hesitation. "Applications are cheaper and faster to develop and easier to run in the Windows NT world," explains Howard Jones, Snapper Inc.



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vice president and CIO

A year ago Adaptec Inc. found itself wrestling with too many network servers. At its Milpitas, Calif., headquarters alone, it had over 75 NetWare servers providing file and print services as well as basic application and database services. Each NetWare-based application required its own server due to reliability issues, and the number of support administrators kept growing. By switching to Windows NT Server 4.0, Adaptec can run multiple applications and databases on

connected to the LAN. They want to use rich, new types of information, such as IP-based telephony and audio and video. And, they want to leverage existing systems to provide strategic advantages. At the same time, they want to ensure a smooth migration to a more open, flexible infrastructure—one where servers can be re-purposed as needed. And IT, business managers insist, must provide it all in a way that ensures security and reliability.

At the same time, global com-

puter, such as Microsoft Windows NT Server. Multi-purpose operating systems incorporate a range of functionality: file and print serving, application services, Web services, communications, and more, observes Jean Bozman, software analyst, International Data Corp. (IDC), Framingham, Mass. But the value goes beyond functionality, multi-purpose operating systems like Windows NT Server also integrate the functionality with a set of management tools and services and a common directory that en-

sures that the result is far greater than the sum of the parts.

In response, IT managers at midsize companies are looking to consolidate and

standardize. "You want to have uniform, consistent capabilities, which is how you can control cost of ownership," advises Brian Connolly, CEO, Enterprise Communication Messaging Solutions (ECMS), Inc., Columbia, S.C., the systems consultant that developed the Snapper sales force automation solution. With uniform, consistent behavior across all systems, applications can be built faster and cheaper, fewer administrators are required, and training is reduced. You also achieve easier, more complete interoperability.

By switching to Windows NT Server, for example, Adaptec not only was able to reduce the number of administrators by about 30%, but each administrator "could do much more than administer a server," Fernandes explains. Because the operations are GUI-based, administration is easy and consistent across services, which allows Adaptec's server administrators to also handle the databases and the applications

"There is no question that reducing the number of operating systems can lower costs." -Jamie Lewis, president, Burton Group

the same server platform and consolidate its file and print services without compromising reliable file and print, reports Ryan Fernandes, Adaptec network operation manager.

As Adaptec and Snapper have discovered, in today's complex and high-pressure IT environments, anything easier, faster, and less expensive will be welcomed. Where one technology can do the job of two or three, and do it as well or better, it is sure to be embraced by IT groups, especially midsize ones that may lack specialized resources.

THE BIG SQUEEZE

Organizations today find themselves increasingly squeezed. Business users are demanding more IT services and capabilities. They want reliable and fast file and print sharing, as usual, but they also want email and messaging. They want rich standards-based intranet solutions and database applications that are as easily accessible by remote users as by employees

petition is forcing organizations to cut costs. The IT group is under the gun to do more with less, and reduce the cost of ownership. Midsize organizations, for example, no longer can maintain multiple IT platforms and train different sets of administrators. As a result, every aspect of the IT function is open to question: training, the mix of vendors and platforms, and more.

GOING MORE

Key to controlling costs while delivering the enhanced IT services is the multi-purpose operating sys-

WINDOWS NT COMES UP STRONG

Below are percentage of IT managers who said their OS platform rated good or very good in these criteria:



➔ Continued on page 8

YEAR OF THE RAS-VPN

Windows NT Server delivers open communication

Th work effectively, people need to communicate and access information easily and efficiently. With the advent of the Internet and e-commerce, organizations need open, flexible, interoperable solutions — not the proprietary point solutions of the past.

Today, open systems — server-based systems that allow organizations to pick and choose among a wide choice of diverse yet interoperable hardware and software products — are enabling companies to change the way they build and manage voice and data networks. Citing a second generation of products and falling prices, IDC projects the RAS (remote access services) market to exceed \$700 million, reflecting a 51 percent CAGR since 1998.

Windows NT Server is the open systems platform for a new generation of simpler, more affordable communications. Organizations today dramatically reduce costs, and increase productivity, by connecting telecommuters, mobile employees, satellite offices, and extranet partners with Windows NT. Windows NT Routing and Remote Access Service and VPN (virtual private network) capabilities facilitate remote access management. Using the Internet and direct private-line connections, Windows customers can easily deploy integrated networking solutions that optimize their application and security needs in the most efficient way possible. According to Infonetics Research, San Jose, Calif., the number one remote access strategy for companies is to deploy a combination VPN/direct-dial service.

Windows NT Server is also helping to dramatically reduce remote access deployment costs with the Connection Manager Administration Kit (available in the Windows NT Option Pack). Using this tool, organizations can centrally configure and deploy single sign-on remote access clients for direct-dial and VPN. Windows NT Server's centrally managed phonebooks ensure these clients can easily access up-to-date local RAS or VPN dial-up phone numbers to make least-cost connections. "By building in and integrating secure VPN, routing, and direct-dial services, we make connecting users and offices easy and safe to use," explains Microsoft's Mike Nash.

Windows NT Server, IDC reports, currently can



support hundreds of simultaneous RAS users and Windows load balancing services, and embedded solutions promise even more scalable VPN services. Windows 2000, IDC adds, will handle significantly more simultaneous RAS users.

HIGH-TECH HOTEL Organizations of all sizes are capitalizing on the integrated communications services of Windows NT Server and innovative network-aware applications. For example, using a Windows NT-based solution, the San Jose Hyatt hotel was able to extend to its high-tech clientele fast, easy, and secure high-speed access to the Internet so they can be more productive while on the road.

The hotel's primary business customer is laptop equipped and travels frequently to Silicon Valley. Through Windows NT Server and San Diego-based ATCOM/INFO's IPORT secure, reliable, public Internet access solution, the hotel is able to provide information and high-speed Internet connectivity in more than 250 of its rooms. The service makes available high-speed Internet links for guests to use to connect to their company networks with Windows VPN services. "Since we turned it on last April, we've experienced steadily increasing usage," reports Jeffrey Burg, executive assistant manager. Now the hotel is looking at more integrated application services it can provide to better service its high-tech clientele with Windows NT Server.

COMPAQ AND MICROSOFT: BETTER PARTNERSHIPS= BETTER SOLUTIONS= BETTER ANSWERS FOR CUSTOMERS

CIOs and IT managers today are faced with some pretty tough questions:

- » "How do I demonstrate IT business value?"
- » "How do I ensure secure network access from anywhere, anytime?"
- » "How do I create a flexible, scalable IT infrastructure?"
- » "How do I manage my heterogeneous network?"

Many organizations have already selected Windows NT Server to meet their computing needs. With any server deployment comes risk – risks of mis-planning for a growing business' needs, risks of inefficient deployments, and risks of complex and costly operations. How does IT management minimize these risks? Wise choices.

WHAT'S HARDWARE GOT TO DO WITH IT?

Does hardware make a difference in deploying Windows NT servers? You bet it does. Deploying a scalable and highly available Server requires a reliable, standards-based hardware platform that helps customers to achieve and sustain competitive advantage, achieve quicker return on their server investment as well as reduce complexity and costs in their IT environment.

Not every hardware vendor is equipped to deliver the kind of performance. Compaq's long-standing partnership and history with Microsoft ensures that both, the server software and hardware are stress-tested, co-engineered and fully optimized for highest performance and reliability. Compaq ProLiant represents the most stable computing environment for running Windows NT based Networking and Application Servers.

There are four main factors that make Compaq ProLiant the platform of choice for Windows NT Server deployments: Fruits of the Frontline Partnership, Shared Commitment to Reducing Complexity, Engineering Excellence and Value-Added Services.

THE PROOF IS IN THE PARTNERSHIP

Compaq's close alliance with Microsoft strengthens its ability to support Windows NT Server deployments

with minimum risk and maximum cost effectiveness.

Compaq has more hands-on, real-world experience with

Windows NT Server than anyone else in the industry. In the past 4 years, Compaq has helped over 3 million users migrate from a multitude of environments to Windows NT. In fact, Microsoft recently named Compaq the first worldwide Prime Integrator for Windows NT.

Compaq has fostered a close relationship with Microsoft for over 15 years

– dating back to 1983, formalized as the Frontline Partnership in 1993. This partnership has provided customers a superior Windows NT server platform that is simple to install, easy to use, and provides excellent value and performance.

The simple reason that the Compaq/Microsoft combination has won over so many customers is that it simply works better and more reliable than competitive solutions. From simplifying installation, to being able to accurately configure the solution, to operating with peak performance, Compaq ProLiant/Windows NT-based solutions make IT management's task easier, the customer's business more productive – and ultimately, through increased uptime and decreased costs of ownership – more profitable.

COMMITMENT TO SIMPLIFICATION

Compaq and Microsoft alike recognize that deploying enterprise-class networks and applications is often a complex, time and resource-straining task for customers. With a co-commitment to simplifying the planning, deployment, and operation of Windows NT-based networks and solutions, Compaq provides expertise and smart tools that enable customers to re-



duce complexity, save time and resources over the life of the server and continues to deliver customer-driven innovations that address key challenges in the IT environment.

Compaq ActiveAnswers for example is the industry's leading online destination for enterprise computing solutions and services. ActiveAnswers serves as a information hub for resellers, VARs, solutions integrators, consultants, ISPs, Web developers and self-integrating companies to gain access to over 40 jointly developed and fully tested solution areas.

Microsoft is one of Compaq's premier ISV partners participating in the co-development of ActiveAnswers. Today, users can gain access to ActiveAnswers for Microsoft Windows NT Server 4.0, where they will find proven methods and best practices for developing and deploying Windows NT 4.0 based networking platforms, as well as ActiveAnswers for various Microsoft Solutions like MicrosoftExchange, Microsoft Site Server, and Microsoft Internet Information Server.

ENGINEERING EXCELLENCE

Compaq and Microsoft engage in many co-engineering and testing efforts including benchmarking, architecture development, and developing lifecycle enhancers.

The Compaq ProLiant family of servers has made headlines for its technological innovations with Fibre Channel, HotPlug PCI, its SmartStart installation tools and

available sizing and configuration tools for Windows NT Server based solutions. Combining Compaq ProLiant with Windows NT delivers customers the most optimized platform for networking infrastructure as well as application server deployments.

ENHANCING SOLUTIONS WITH SERVICES

One of the crown jewels of Compaq today is its Services Organization. Its portfolio of customer-proven services features Windows NT-related offerings including: Enterprise Windows NT Services, Microsoft

"Compaq and Microsoft work together at a fundamental level to provide the highest possible levels of integration, reliability and performance. The Frontline Partnership works for our customers."

-Eckhard Pfeiffer, President and CEO, Compaq Corporation

Exchange Services, Internet/Intranet Services, Financial Services Industry Solutions, Intelligent Network Service Solutions, Lifecycle Services, Support Services for Windows NT and High Availability Services.

Compaq Services boasts more Microsoft Certified Solution Developers (MCSDs) and Microsoft Certified Solution Engineers (MCSEs) than any other vendor combined. MCSE and MCSd represent the highest certification level for Microsoft technologies, and Compaq currently has over 2,000 professionals certified at this level and will add 1,000 more by the end of 1999.

WHAT'S NEXT FOR THE COMPAQ WINDOWS NT SERVER PLATFORM?

1999 presents a unique balancing-act challenge for CIOs and IT managers – as they address questions about network management, scalability, reliability, and reducing TCO, they also face the additional question of "Will our organization be Y2K resilient?" After the Y2K milestone comes and goes, attention will refocus on creating the web-enabled enterprise. As the demand for multi-dimensional and inter-connected supply chains increases, enterprise customers will turn more and more to the Internet extending their networks into "business ecosystems." The flexibility and robust nature of Windows NT provides the digital nervous system for bringing these ecosystems to life. Together as business partners, Compaq and Microsoft will continue to work to make these ecosystems interoperable, secure, manageable – and affordable. That's what the Compaq and Microsoft partnership is all about – delivering best of class enterprise solutions to customers worldwide.

COMPAQ

THE COMPAQ AND WINDOWS NT SERVER 4.0 ADVANTAGES:
<http://www.compaq.com/partners/microsoft/products/ntserver.html>
COMPAQ ACTIVEANSWERS FOR NT SERVER 4.0:
<http://www.compaq.com/activeanswers/ntserver/ntse.html>
COMPAQ/MICROSOFT FRONTLINE PARTNERSHIP:
<http://www.compaq.com/partners/microsoft/ntserver.html>
COMPAQ PROLIANT SERVER INFORMATION:
<http://www.compaq.com/products/ntserver/>

Continued from page 4

"We are getting more bang from our administrators," he reports.

In the past, IT has turned to specialized operating systems to perform different functions. This came about because of the limitations of the technology at the time, particularly PCs. "A PC with a 386 processor simply couldn't run big databases or applications, which is a key requirement for serious business servers," explains Mike Nash,

operability and efficient, effective administration and management

WINDOWS NT SERVER DELIVERS BENEFITS

As its term implies, the multi-purpose operating system includes a range of capabilities. Ideally, the multi-purpose OS will allow the organization to easily enable or disable particular functionality as dictated by the organization's situation, explains Jamie Lewis, pres-

cess services.

- Integrates advanced features such as virtual private networking and streaming media.
- Provides efficient management and administration, with enhanced hierarchical directory support coming shortly.
- Offers a robust, tightly integrated security model that delivers complete security through a single, efficient security process.
- And all of these features come

wrapped with an integrated set of services that enable organizations to efficiently administer their open, distributed systems environment.

Ultimately, the payoff from the multi-purpose operating system is more effective computing. "There is no question that reducing the number of operating systems can lower costs," says Lewis.

The lower costs are achieved through savings that result from the simplified, consolidated computing environment due to advanced, tightly integrated functionality and consistent security. This allows IT groups to redirect administrators toward higher value work. Adapted, for example, cut more than 30 servers as well as re-deployed its administrative staff. Particularly for smaller and mid-size companies, Lewis concludes, "the multi-purpose operating system will become more important."

Over the past several years,

"Windows NT is already a requirement for success among virtually all industry vendors."

- International Data Corp.

ident, Burton Group, Salt Lake City. This reduces the investment risk while providing the power and scalability of dedicated servers.

Windows NT Server offers the kind of multi-purpose capabilities once associated with more costly and often proprietary platforms. Highly modular, Windows NT Server enables midsize organizations to pick and choose functionality and add new functionality as needed. Specifically, Windows NT Server:

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Windows NT Server offers the kind of multi-purpose capabilities once associated with more costly and often proprietary platforms. Highly modular, Windows NT Server enables midsize organizations to pick and choose functionality and add new functionality as needed. Specifically, Windows NT Server:

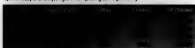
- Provides fast and reliable file and print.
- Handles sophisticated applications and complex relational databases.
- Offers Web application services, as well as advanced communications with integrated remote ac-

Suddenly organizations were running three or more operating systems and deploying dedicated proprietary point solutions. This created headaches for the IT group, requiring them to hire and train administrators for each OS, and to try to forge some level of interoperability between platforms.

"In the 1980s it was all we could do to knit PCs together. In the 1990s, we want better interoperability. We also want more capabilities, including integrated Internet," IDC's Bozeman notes, explaining the evolution from network operating systems that simply allowed organizations to tie together PCs to today's multi-purpose operating systems that integrate a wide range of functionality. Moving forward, organizations will not only want that range of functionality but seamless inter-

WINDOWS NT GAINS ON UNIX, NETWARE

Percent of business applications supported by each operating system today and two years from now (basis of 200 respondents)



Source: CompuLink/International Data Corporation/Edward Reardon & Associates

WIRED MEDICINE

Windows NT streaming media helps with healthcare training

Streaming media—rich, synchronized audio, video, and Web pages—plays an increasingly important role in organizations. Many companies are turning to streaming media over the network to reduce training costs by eliminating the need for workers to travel to training sessions. At the same time, it can provide a better training experience to more people.

Windows Media Services in Windows NT Server, for example, allows Partners Healthcare System, Boston, to literally put its medical expertise on the Web. The health organization, closely affiliated with the world-renowned Massachusetts General Hospital, is committed to educating physicians and healthcare professionals. Having already standardized on Windows NT Server, the organization had no trouble adding audio/video to its educational offerings, reports Joseph Kvedar, director of telemedicine.

"In the past, we brought people into an auditorium. Now they can access the same thing through a Web site using their browser and the Windows Media Player," Kvedar explains. Though it's not quite the same, he adds, it's better. Through the Web site viewers can simultaneously access supplemental information, such as PowerPoint® slides. The result is a richer experience for users. At the same time, Partners is able to reach a broader audience while saving time and money.



Microsoft has shaped Windows NT Server into a leading multi-purpose operating system. IDC concludes: Windows NT will lead the OS market. This growth, IDC notes, will come at the expense of Unix and other operating systems.

PROOF IN PERFORMANCE

Market acceptance can be attributed, in part, to performance. In testing by Mindcraft Inc., Los Gatos, Calif., an independent test lab, Windows NT Server as a file server performed 25.5% faster than NetWare 5 when configured with out-of-the-box settings that customers can actually apply in real world environments. When performance is correlated to cost, Mindcraft found that Windows NT Server 4.0 provides a 3 times better performance for the price (www.mindcraft.com/whitepapers/nt4nw5filest.html). In Web performance tests Mindcraft found Windows NT Server 4.0 to be four times faster than Solaris 2.6 with its Web server and it offers 10.3 times better price/performance (www.mindcraft.com/whitepapers/ntsp26web.html).

Windows NT Server also enjoys widespread industry support from thousands of hardware vendors, independent software vendors, and support services companies. "There are over 200,000 professionals trained on Windows NT, more than with any other platform," says Microsoft's Nash.

Windows NT Server 4.0 clearly delivers. "The application we built for Snapper could not be built on NetWare," Connelly insists. The application for Windows NT was quicker to build and used less hardware than would be the case with other operating systems, and it is also more scalable and easier to administer, he adds.

→ Continued on page 12

SERVING UP APPLICATIONS

Windows NT Server takes business to the Web

At the heart of every business are applications that allow the organization to take orders, buy inventory, deliver goods and services, and perform a host of other activities.

An application server is a group of software services that support the creation of robust, scalable server applications, which are accessible from browser and non-browser clients.

Windows NT Server is widely accepted as a leading application server. Thousands of independent software vendors target their applications for the Windows NT platform. These vendors are taking advantage of the rich application services provided by features such as Microsoft Transaction Server (MTS) and Microsoft Message Queuing Services (MSMQ) in building n-tier distributed applications.

For example, MTS provides the services a Windows NT application needs to be distributed, secure, and transactional. With an easy-to-use programming model, MTS makes these application services available to mainstream developers, allowing them to spend more time on business problems.

As an application server, Windows NT Server enables the rapid development of applications. It provides a robust, secure transaction environment able to handle business-critical applications and offers messaging and queuing for interoperability. In the process, it delivers efficient database pooling and load balancing, ensuring that the organization gets maximum performance from its systems. All of this technology is unified by a single component model, making it easier to integrate and evolve applications. By capitalizing on the power of component-based application services, organizations can take their existing products and re-deploy them on the Web as Windows DNA (the Microsoft architecture) solutions easily by leveraging the application services in Windows NT Server.

BUILT FOR THE WEB With Web connectivity built directly in Windows NT Server, organizations can position themselves to tap into a rich and growing e-commerce environment. The integrated application services provided by Internet Information Server (IIS) in Windows NT lets organizations use

the Internet to share information or provide rich Web-based application services.

For example, 1-800-Flowers Inc., Westbury, N.Y., a direct marketer of flowers and e-commerce pioneer, initially built its Web commerce system in-house. "When application services like MTS and IIS became available, we liked what they had to offer. We have been able to build an enterprise class Web



site by leveraging the strengths of the Windows NT Server," recalls Donna Lucelane, vice president, interactive services.

The 1-800-Flowers Web site is built on top of the application services found in Windows NT Server and integrates with the back-end order processing and fulfillment systems, which are built on an Oracle database and run on the Unix platform. The company runs a mix of Windows NT and Unix servers. Says Lucelane, "Windows NT is a powerful platform for developing distributed applications. Our programmers can focus on the business tasks at hand because they have a seamless development environment based on the integration of Windows NT Server, the application services, and the development tools." Windows NT Server also provides a very scalable environment. "Our business is seasonal and Windows NT is also easy to scale up for peak times," Lucelane explains.

Similarly, barnesandnoble.com, the Web commerce arm of Barnes and Noble, adopted Windows NT Server for its platform and systems infrastructure when it launched its online business in 1997. The giant bookseller chose Windows NT Server 4.0 for its scalability and flexibility, notes Ben Boyd, vice president, communications.

Windows NT Server has proven itself. Barnesandnoble.com experiences 19 million page views on average each week. It has been cited as the third-largest e-commerce site. "Windows NT Server and its application services are the infrastructure that will take us into the future," Boyd concludes.

Although not every business is as engaged in Web commerce as 1-800-Flowers and barnesandnoble.com, the same application services that make Windows NT Server ideal for Web business also make it effective for intranet and extranet applications.





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STICKING TO THE BASICS

Windows NT Server stays true to its core

While it is the advanced features of Windows NT Server that grab attention, the multi-purpose operating system continues to deliver efficient core networking services such as very fast and reliable file and print. The Windows NT Server file system (NTFS) is a highly scalable, easy to manage, secure file system for sharing files across an organization, regardless of the desktop system. Windows NT Server supports MS-DOS® and all 16-bit and 32-bit Windows-based clients, as well as Unix and Macintosh clients. It also works with other servers that may be on the network, such as NetWare and Unix.

Strong security is another core capability. "Windows NT Server offers the most robust and flexible security model of any general-purpose server or workstation operating system on the market today," asserts Microsoft's Nash. It includes such features as trusted-path logon and the Security Reference Monitor, which establishes a single place within the operating system for resource authorization services. This ensures that customers can lock-down their environment as they see fit.

Windows NT security, however, is flexible. Windows NT Server can be configured to favor user convenience over security, or to provide the high security that is often required by government agencies.

Windows NT Server also provides a core set of built-in services that form the foundation of basic management. Administrators can balance both centralized and decentralized control, ensure service availability and quality of service, and minimize cost of ownership. Windows 2000 Server will enhance



Windows NT Server's management capabilities with the Active Directory, allowing administrators to manage system resources more easily and efficiently. These are precisely the features that have Adaptec pumped up about Windows 2000 Server. Until last year, Adaptec relied on Novell NetWare as its primary file and print server, as well as for database and application serving. Adaptec switched to Windows NT Server, however, and the result was a savings in costs, reports Adaptec's Fernandes. The company anticipates even greater savings to come with Windows 2000 Server, he notes.

← Continued from page 9

IDC states: "Windows NT is already a requirement for success among virtually all industry vendors." IDC projects Windows NT Server to surpass NetWare as the top installed server OS by 2000-2001. Looking ahead to clustered Intel servers, a new hierar-

chical Windows 2000 Active Directory, and other advanced features in the Windows 2000 operating system, it will only get better.

The same will likely be said for midsize organizations. Windows NT Server gives midsize organizations what they need to compete in the information-driven environment of the 21st century: a flexible, efficient, and open computing infrastructure based on Windows. •

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Project Management:
Wes Lambert, Scott Latta
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BUSINESS

A NEW PATH TO SUCCESS

Ambitious Young Turks often angle to move out of IT to climb the corporate ladder. But some business types are finding they ascend faster if they move between IT and business groups repeatedly. **» 51**

INTERNET INTRANSIGENCE

At The Weather Channel, IT people resisted efforts to set up a Web site. Analysts say that's far from unusual. High hit rates overcome doubts, though. **» 48**

HEAD OFF HEADHUNTERS

It's almost impossible to prevent raids of your staff. But you can fix it so raiders take the odes you wish would leave anyway. If you make life a little harder for recruiters and a little better for your people, you'll be fine. **» 54**

LET THEM ENTERTAIN ME

ConEdison found a quick and convenient way to train workers — using PCs connected to a virtual classroom. But the key to making it work is a teacher who can pull them all into a common experience, serving as tutor, producer and entertainer. **» 48**

SPENDTHRIFTS?

Observers are puzzled about why federal agencies

are spending millions more than they have to by hiring consultants to fix Y2K bugs that are less expensive to squish with in-house talent. Complex legacies plague some, but others make repairs on the cheap with no problem. **» 50**

SEX IN THE WORKPLACE

Gender equality in the workplace is a worthy goal, Kathleen Melymuka writes, but what happens when everyone pretends gender doesn't exist? Women deny characteristics that make them effective, and men feel constricted by political correctness. **» 56**

SEEING Y2K AS AN INVESTMENT

How can you use Y2K to make money? If you work in a mature market, you can use Y2K investments as you would any other investment in operational efficiency — and grab some market share before competitors catch up. Ed Yourdon writes. **» 52**

AIN'T BROKE? DON'T FIX IT

Cool Web technology tempts big companies that handle business-to-business transactions electronically, but many stick with good old electronic data interchange (EDI). They do shift EDI from leased lines to intranets, though. **» 48.**

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IT'S JUST LIKE HERDING CATS

IF YOU'RE ROLLING OUT a new customer-relationship management system, your biggest challenge is getting different user groups — salespeople and call center workers, for example — to fuse their various views of customers into a coherent picture. IT managers like Howard Koenig at ADP (above) say a coordinated response improves customer satisfaction and revenue, but getting end users onboard is tricky.

60

COST-SAVING NET POSES TEACHER CHALLENGE

Rare breed needed to run interactive course

BY JULIA RINI
LONG ISLAND CITY, N.Y.

FOLLOWING A successful, yearlong pilot test, Consolidated Edison Company of New York Inc. is investing millions in a new, state-of-the-art interactive learning network designed to cut training costs by as much as 80%.

But first, the utility has to

find more rare individuals like Charlie Speed, who know all about occupational health and safety regulations; can simultaneously operate voice, data and video equipment; and have what it takes to hold the attention of dozens of mechanics, cable-layers and other tradesmen who attend Speed's online classes live via PCs as far as 35 miles away.

"We don't want a bunch of talking heads, and one of our biggest issues is transitioning our instructors to be producers as well as teachers," said John Torchia, director of Con Ed's Learning Center here.

Another issue involves retooling thousands of pages of documentation from more than 700 traditional, in-person training courses for live presentation over the new fiber-optic network. That means becoming an expert user of a

variety of system components, including videoconferencing, streaming, video and interactive question-and-answer sessions from vendors like Intel Corp., One Touch Systems Inc. and GTE Internetworking.

Sitting at his console, with headset and microphone in place, Speed, a former meter reader, looks like the Wizard of Oz as he positions cameras, taps messages on a keyboard and queues up video clips — all the while talking and joking with students.

"To do this job, you've got to be a subject-matter expert, pseudoproducer and a little bit of an entertainer," said Speed, who in his off-hours operates his own recording studio and heads an association of singers and songwriters on Long Island. "You also have to learn to associate with your students, even though you can't see them. So you need to get an audio feel by constantly cycling through the classroom, asking people by name if they have questions."

Meanwhile, students like Ron Michelino, a lead mechanic on a Brooklyn-based cable gang,

watch Speed on PCs equipped with real-time audio and video that let them interact with Speed back at his studio.

"It was kind of intimidating at first, but 10 or 15 minutes into the class, it was fine. You sort of get mesmerized, and you really concentrate on what you're doing," said Michelino,



TRAINER CHARLIE SPEED: "You've got to be a subject-matter expert, pseudoproducer and a little bit of an entertainer"

a 28-year Con Ed worker with no prior PC experience.

For additional instructors, Con Ed and other companies should first look to help desk workers, said Elliott Masie, president of The Masie Center, a Saratoga Springs, N.Y.-based training consultancy.

"They're used to delivering verbal information without visual feedback and in a very concise fashion," Masie said. ▀

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Yale Hones Fund Drive With Reporting Tools

Requests target alumni based on gift patterns

BY STEWART DECK

If it were your job to raise money, it would seem that a top Ivy League university — with ranks of wealthy alumni — would be an easy place to do it. Not so, to hear from fund-raisers at Yale University.

As in any sales job, you have to keep in close touch with major donors but not pester them.

You also have to find the proper way to approach new customers. But the balance is a little trickier than a straight sales job because the donors aren't receiving any goods for their money.

Yale stores gift-giving and other information about its alumni and donors in an Oracle® database that is 2G bytes large and still growing. But with inadequate reporting tools, the 160 system users could pull up only a single name at a time and had to fill

out detailed request forms to get broad donor groupings. "Our staff needed to spend far less time filling out paper forms and more time communicating with constituents," said Marcia Schels, a senior information technology project manager at Yale's development office. So the school started looking at different types of reporting tools to give users better access to more data.

"We pull data from up to 20 tables into one report and incorporate tons of business logic along with it," Schels explained. Reports sort donors according to geography, the type of projects to which they contribute and dozens of other factors that make them likely prospects for a particular fund drive. "We aren't just selecting data and plopping it down," Schels said.

After examining tools from Oracle Corp. and Seagate Software, Yale decided on Scribe Enterprise Server from Scribe Technologies in Redwood City, Calif., for its scripting language and ability to handle complex reports. Once Enterprise is fully in place, the development office will use it to develop reports and interactive analysis through a Web-based interface.

Scribe's tools give users a broad reach into enterprise data, said Wayne Eckerson, vice president of technology services at the Data Warehouse Institute, a for-profit educational group in Gaithersburg, Md. ▀



YALE'S MARCIA SHEL: "Our staff needed to spend far less time filling out paper forms and more time communicating with constituents"

Databases to Coordinate DHL/Postal Service Delivery

BY STEWART DECK

The U.S. Postal Service has announced a partnership with DHL Airways Inc. that will let post office customers send two-day letters to Western Europe.

The program expands the reach of the Postal Service, while letting DHL, a new business using its extensive European delivery network and package-tracking system.

Called Priority Mail Global Guaranteed, the service will go live April 12.

Unlike private package carriers like Federal Express Corp. and United Parcel Service of America Inc., the Postal Ser-

vice hasn't been able to guarantee two-day delivery to Europe because it had to hand off letters to foreign postal administrations, said John Kelly, the Postal Service's vice president of expedited/package services.

The Postal Service will scan packages into its package-tracking database and ship them to New York's JFK Airport. Then, DHL will rescan the Postal Service bar codes and add bar codes suitable for its Easy Ship tracking system.

When DHL delivers the packages to Europe, the Easy Ship system will update the Postal Service database via electronic data interchange. ▀

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USERS CLING TO EDI FOR CRITICAL TRANSACTIONS

Some experimenting with Web forms, Net transmission, but full transition still far off

BY CAROL ULINA

LARGE COMPANIES that have relied on electronic data interchange (EDI) for business transactions are now experimenting with Web-based forms to link them to smaller suppliers that have resisted setting up EDI systems.

But while they view the new technology as promising, they're still not abandoning traditional EDI systems when it comes to their most important business-to-business buying and selling transactions.

"Shifting from EDI to other technologies is not happening at all," said Steven Bell, an analyst at Forrester Research Inc.

in Cambridge, Mass. Companies generally conclude that "it ain't broken; don't fix it," he said.

What Bell has seen happening, however, is that companies that have been using leased lines to transport EDI messages or extranet-based transport mechanisms. EDI messages are sent between companies via leased lines or through value-added networks (VAN) that typically provide other customer services such as setting up trading partners and translating data into an EDI format.

Companies using VANs probably won't start moving to Internet-based transport until

next year, Bell said. "Trying to move them to anything else is a gargantuan effort. Now IT is too busy with Y2K," he said.

Case Corp. isn't just sticking with a VAN: it's ramping up 400 new suppliers to do EDI transactions through its GE Information Services (GEIS) VAN. The Racine, Wis., agricultural and construction equipment maker finds the VAN-based approach more reliable for ensuring that purchase orders shoot directly into their suppliers' systems without human intervention, said Greg Modlinski, Case's electronic-commerce business lead.

But like many companies, Case also is setting up an extranet and looking into using electronic Web forms to bring in some of its smaller trading partners that have resisted EDI because of its expense and complexity.

Caterpillar Inc. just brought 20 smaller suppliers online using GEIS's Web Access module but has no immediate plans to convert any of the 1,800 others it deals with using EDI. "It's for a small, niche audience" said Roger Proctor, a technical specialist at Caterpillar.

One drawback to Web-based electronic forms is that they now facilitate only person-to-computer transactions. But

EDI transactions typically run computer-to-computer, eliminating the possibility of errors.

"The Internet will be the future," said Holger Huel, chief financial officer at Boehringer Ingelheim Corp., a pharmaceutical company in Biberach, Conn. Right now his company faces bigger concerns, Huel said, such as the year 2000 problem and the installation of a new enterprise resource planning system. ▀

MORE ONLINE

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Early Days Stormy at Weather.com

Internal resistance struck cable TV site

BY SHARON MACHLIS
LOS ANGELES

It's a problem that many corporate Internet initiatives encounter but few executives want to talk about: resistance within the company from organizations that feel threatened by the new endeavor.

At The Weather Channel, "We had to fight," said Mike Carey, senior vice president for new media, during a presentation at the Direct Marketing Association's Net.marketing conference in Los Angeles. "We got no cooperation from our technical people. I mean zip. They didn't even answer our... calls."

Meanwhile, people at the Atlanta-based cable TV channel didn't want to promote the Web site on the air, afraid that doing so would encourage viewers to use the Web instead of tuning in to the station. "For about a year, they just hated us," Carey said.

Internal conflict in such situations is common, said Barry

Parr, an analyst at International Data Corp. in Mountain View, Calif. An effective way to counter resistance, he said, is to garner support at the top: Get the president or CEO to make it clear that the Internet is an important part of the business.

Carey's team responded by creating its own support. "We commandeered some technical people, hired others," he said. "We built this thing by hook and by crook. What turned it around? Volume. Numbers count." As traffic to the site soared and the group kept requesting new large, multiprocessor Sun Microsystems Inc. servers

every month, other executives took notice. "All of a sudden it was worthwhile," Carey said. The funding followed.

Today, the site (www.weather.com) is one of the Web's 20 most-visited. And the cable channel's viewership hasn't suffered. The Web site's technology is being deployed elsewhere in the corporation, he said.

Other conference speakers acknowledged similar conflicts. "There's always going to be some resistance" to new Web activities because many people don't truly understand the medium, said Michele Bartram, chief of electronic marketing and development at the U.S. Mint in Washington. She said resistance eased as the mint after people learned more and other department representatives came onboard. ▀



WEATHER CHANNEL'S MIKE CAREY: "They just hated us."

New Intranet Helps Golfers Manage Careers - and Lives

20 PGA vets helped IBM develop system

BY THOMAS HOFFMAN

It's hard to feel much sympathy for professional golfers who earn millions of dollars playing the best courses at the most exotic places on earth.

But most players on the Professional Golfers Association (PGA) Tour spend more than half the year on the road, which makes it difficult for them to manage tournament registrations, transportation and finances.

A new intranet was designed to make life easier for the PGA's 204 touring pros by giving them a place to find schedules and player statistics and links to a

players-only bulletin board.

The PGA Tour Links system was developed by IBM and the PGA with the help of 20 golfers on the tour.

The system, maintained and sponsored by IBM, took 10 months to develop and was rolled out in mid-January.

Lanny Wadkins, a 28-year tour veteran, uses it daily to track his stocks. "After a round,

I'll see how I did that day — and sometimes it's better than I did on the golf course," he said.

Phil Mickelson said he uses it to download information about the next course he's going to play. The system has fostered "interaction between the players through e-mail and the bulletin board," he said.

Future enhancements may include a balloting tool "so we can poll the players electronically on policy issues, player-of-the-year voting" and other matters, said Steve Evans, IS chief for the PGA Tour in Ponte Vedra, Fla. ▀



PGA GOLFERS meet at Dunes Lake III (above) and at right in front of PGA Tour Links to register for tournaments and manage investments

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FEDERAL AGENCIES OPT FOR MANUAL FIXES

Most units eschew filtering software, though one department uses it and saves

BY THOMAS HOFFMAN

IT'S AN AGE-OLD riddle: Why would the government pay \$20 for a paper clip that it could buy for a penny?

The same question could be addressed to the many federal agencies that have opted for more time-consuming and expensive ways of renovating their software in work in year 2000 when cheaper alternatives are available.

In general, federal agencies are spending \$1.25 to \$1.50 to fix each line of code manually when they could probably renovate their systems for a fraction of that cost using automated software tools. The Bureau of Indian Affairs (BIA), for example, said it just fixed 1.58 million lines of Cobol code at a cost of 14 cents per line using software from Waltham, Mass.-based Data Dimensions Inc.

In light of the BIA's experience, it's puzzling why other agencies such as the Federal Aviation Administration and the Internal Revenue Service would spend tens of millions of dollars to pay external consultants to manually repair old software code. The General Accounting Office stated that as federal agencies "more fully realized the complexities and extent" of year 2000 work, costs for the government's 24 major departments tripled between February 1997 and November 1998.

"We were lucky that we didn't have to hire an army of programmers" to work on the year

contracts between federal agencies and big service firms that stand to profit more by fixing code on an hourly basis than by using a relatively cheap software filter to scan for hidden date fields and repair them.

Federal managers and industry experts offer other explanations. For starters, when millennium projects first began,

one of the "good ole boy" firms" already on the list, said Howard Rubin, a research fellow at Meta Group Inc. in Stamford, Conn.

In addition, most federal agencies have long-standing contractual relationships with vendors "so the procurement process is easier" with them, Isfahani said. It's just easier to give them the work, even if it's more expensive, he explained.

Plus, year 2000 became more expensive for agencies that were dragging their feet getting started. A January re-



THE FAA IS JUST ONE of the agencies spending tens of millions of dollars to pay external consultants to manually repair old software code

few of the niche tools providers such as Phoenix-based Viasoft Inc. were on the General Services Administration's list of approved vendors from which agencies could purchase equipment, noted Karim Isfahani, an analyst at Giga Information Group Inc. in Cambridge, Mass.

To get on the list, the tools vendors "have to partner with

port from the U.S. General Accounting Office stated that as federal agencies "more fully realized the complexities and extent" of year 2000 work, costs for the government's 24 major departments tripled between February 1997 and November 1998.

"We were lucky that we didn't have to hire an army of programmers" to work on the year

2000 bug, said a spokesman for the FAA in Washington, who explained that the agency already had a team of in-house and contract programmers maintaining its systems.

But that doesn't explain why each of the FAA's 14 year 2000 contractors, including Fairfax, Va.-based James Martin & Co., snubbed an opportunity to participate in a free pilot program and sample Waltham, Mass.-based Data Dimensions Inc.'s Millennium Solutions renovation tool.

Too Good to Be True?

Data Integrity's tool helped the BIA save six months of labor and more than \$2 million, according to Mona Infield, chief of application support at the BIA in Albuquerque, N.M. That works out to roughly 14 cents per line of code, including \$80,000 in labor costs and \$200,000 for the tool, she said.

Isfahani said he was "suspicious" about how inexpensive BIA's remediation costs were. "I've heard these pitches [of] a nickel a line for a million lines of code before, and it just sounds too good to be true," he said.

"I think it's a question of timing — a lot of these tools weren't available until recently," said Kathy Adams, year 2000 program director at the Social Security Administration, which is one of the few agencies praised by the GAO for its progress.

She warned that line-of-code cost estimates are deceiving because they reflect only in-house software that's been repaired, excluding upgrades and revisions required for third-party commercial software packages.

"There's no much variation

with those costs, because if you have an in-house staff that knows the code and can fix it, those costs will be a lot lower than contracting it out," Adams said.

As for the FAA's reason for turning down automation tools, "it's a mystery to us," said Allen Burgess, president and CEO of Data Integrity.

"There's no simple answer to how we renovated the code," said an FAA spokesman.

Other federal managers said their remediation strategies are based on unique processing and business requirements. The Health Care Financing Administration (HCFA) in Baltimore, for example, had to fix a managed care system that contained 1 million lines of Model 204 code, an "old IBM relational database you can't just go out and buy [remediation] tools for," said CIO Gary Christoph.

HCFA has used year 2000 tools from vendors such as Columbia, Md.-based McCabe & Associates Inc. and AwerStar Inc. in Burlington, Mass. But Christoph said he "would be very suspect of a tools-only approach" that didn't include technicians manually reviewing 30-year-old programs with date fields that were named after former girlfriends.

There are a fair number of federal agencies that have programs written in obscure languages such as Mumps and Algol. In those situations, the code has to be manually remediated because there are few tools available for those technologies.

"It's the difference between a surgeon and a butcher using a scalpel," Christoph said. "If you don't understand what the tool can do, you can [infect] a lot of damage."

BRIEFS

Noncompliant Prods

Manufacturers are still discovering year 2000 problems with software and hardware products, Infobase Corp. in Pittsburgh said last week. The company published the *Shift Report*, which revealed there were 1,000 changes in compliance status by manufacturers between November and January, which could mean

a product once believed compliant is noncompliant or needs work.

Chemical Maker Is Y2K Ready

BAIF Canada, the Toronto-based arm of German chemical giant BASF AG, said it has attained year 2000-readiness for its logistics and financial systems. With the help of Toronto consultant Flomax-Rothwood International, BASF Canada fixed 5 million lines of code written

in Spreadsheets, Cobol, Business Basic and Powerhouse during an eight-month remediation project.

Contingency Planning Tool for Year 2000

Market Partners Inc. in King of Prussia, Pa., has introduced Contingency Express, a software tool aimed at helping financial institutions develop year 2000 contingency plans. The package is priced at \$295.

SNAPSHOT

Fortune 500 rank*	89	130
Speeding through Sept. 30, 1998	\$28M	\$25M
Estimate of total year 2000 cost	\$75M	\$75M

*SOURCE: FORTUNE 500. FIGURES REPRESENTED ABOVE ARE REPRODUCED AND EXPANDED COMPARISON



In & Out of IT

Ken Anderson is a bit of an oddity in corporate America. In the past 13 years, he's moved between business operations and IT five times.

A history like that just might make Anderson eligible for inclusion in some sort of IT record book. But he'd be a rarity even if he made the move from business into IT only once. After all, that particular migration path remains lightly traveled. At most companies, the road to advancement still leads toward the business unit

By Rochelle Garner

SO WHY DOES Anderson continually bounce back to IT? "I have a thing for information technology," says Anderson, vice president of supply chain systems at Office Depot Inc. in Delray Beach, Fla. "Besides, I've never worked at a company where IT wasn't respected. My moves have never been viewed as detrimental to my career."

And there's the crux of it: respect for the IT organization. Few businesspeople, after all, want to exile themselves to a corporate backwater. That fact alone tends to restrict this sort of career transition to those companies that view IT and business as equal partners.

That's certainly the case at Office Depot, with its all-out effort to use the Internet for competitive advantage. It's also true at Federal Express Corp. in Memphis, Elf Atochem North America Inc. in Philadelphia and United Parcel Service of America Inc. in Atlanta. All

of these companies view IT as integral to their well-being.

But that doesn't mean people from the two sides of the house view the world the same way or readily accept the new transplant.

"Coming into IT was like entering a foreign country," says Rick Nordqvist, managing director of strategic sales systems at FedEx. Nordqvist had been the technology guru in FedEx's ground operations division, but he quickly found he didn't know jack about what was under the covers.

Out of IT

"Oddly enough, I believe I became a better manager because I had to rely very heavily on the people who reported to me," Nordqvist says. "Every good leader is taught to ask the opinion of the people who work for you. I had no choice; I asked for their input on everything."

It's no surprise that because of the 10

years he's worked in IT, Nordqvist has a deeper knowledge of technology.

But that isn't his real value to the organization. It's his insight into the company, having worked for 13 years with FedEx's vans, airplanes and couriers.

"We had a senior IT person who was determined to gather all of the data he needed to answer a high-level question our [chief operating officer] posed on our airline efficiency," Nordqvist says. "Our IT person — who was extremely senior — wanted to create a database system to capture the information. Because I'd worked in the field organization, I knew that having to enter all of that data would have made it impossible for people to do their jobs. I pointed out that his system would delay 99% of the flights, which probably was not what the COO had in mind."

On Top of IT

"Moving back and forth has made it a whole lot easier to do this job," Anderson agrees. "I have a deep comprehension of where the risks are, regardless of whether they're associated with IT or with marketing."

In fact, everyone interviewed for this article spoke about how their business acumen sharpened their management skills.

Their point: Business knowledge enhances their ability to manage technology. It's a theme echoed by everyone interviewed.

But people also spoke of something else.

"It's the acceptance factor — wondering what this bean counter knows about computers," says Ken Lacy, who moved from corporate controller at UPS to the No. 2 spot in IT and, ultimately, became CIO. "At first, it was a testing environment," Lacy says candidly. "The more I learned, the less they questioned me."

Think about that for a moment. Here's the CIO of a company known for spending \$1 billion per year on technology, and he still got the wary eye from his organization.

"It takes time for the comfort factor to settle in," agrees Larry Hartman, who moved from director of customer service at Elf Atochem to director of business management for operations support. "It's not like being viewed as from the other camp so much as seeing you as someone who doesn't have the full grasp of what IT is doing."

Oh, don't get the impression that these business folks were treated badly by their new IT colleagues. They say they weren't.

Still, if IT organizations are ever to become a step up the corporate ladder, they will have to become a bit more open to their less-technical peers. ▀

Garner is a freelance writer in San Carlos, Calif.

Part of the Team?



I've never worked at a company where IT wasn't respected.

KEN ANDERSON, OFFICE DEPOT



It takes time for the comfort factor [for accepting IT] to settle in.

LARRY HARTMAN, ELF ATOCHEM NORTH AMERICA



It was a testing environment. The more I learned, the less they questioned me.

KEN LACY, UPS



Every good leader is taught to ask the opinion of the people who work for you.

RICK NORDQVIST, FEDERAL EXPRESS

NEW REPORTS

Process-Specific
Apps Hard to Find

A new study reports that although manufacturers want to abandon homogeneous process-specific applications, they still have trouble finding adequate replacements from outside suppliers.

"The Process of Process: Enterprise Business Applications in the Process Manufacturing Industries," a 90-page report from Aberdeen Group Inc. in Boston, covers the trends in process-manufacturing industries and the information technology needs of process manufacturing and leading application suppliers.

The report costs \$895. www.aberdeen.com

E-Brokers Rated

In a report from Forrester Research Inc., called "Terrestrial Trade Publishers," online investors rank brokers in areas such as advice, site performance and site design.

According to the Cambridge, Mass., company's report, Dutch Online Brokerage Services Corp. and Securities Inc. top the list, high-performance niche, and Charles Schwab & Co. is the leading choice for the advisor.

IT by Industry

Breakdown of U.S. IT spending for 2000:

\$55.6B	Financial services
\$52.4B	Process manufacturing
\$30.8B	Discrete manufacturing
\$32.6B	Retail distribution
\$18.9B	Wholesale distribution
\$18.6B	Health services
\$12.7B	Federal government
\$10.5B	State and local governments

conclusion, Forrester said about 2.5 million North American households invest online. www.forrester.com

Less Help

Ratio of non-IT to IT personnel

Year	Ratio
1995	38:1
1998	52:1

Source: Interviews with 420 outside companies, November 1998

Source: www.aberdeen.com

Supply-Chain
Rebound Expected

Although the supply-chain management market is slowing down, it's expected to grow 50% this year, according to a report from AMR Research Inc. in Boston.

The relatively flat supply-chain management market will improve later this year as year 2000 projects wind down and vendors expect supply-chain offerings. The \$4.5 billion 1999 market will include a supply-chain planning segment that will increase by 50% and a supply-chain execution segment that will increase by 42%. www.amrresearch.com

BRIEFS

Now You Can Buy
WSJ by the Day

The Wall Street Journal Interactive Edition has today passed to its subscription site for \$3.95 (the price is valid for ten days until May 30). The Journal is using a content-purchasing network by Quota Inc. in Seattle to offer the service.

Also selling content on the Quota site: Internet economy publication *The Industry Standard* in San Francisco; *Investment* in Chicago, a publisher of content-based data; and the U.S. Department of Commerce.

ED YOURDON

Getting a Y2K edge
on the competition

FAIRLY OR UNFAIRLY, IT departments have been blamed for causing the year 2000 problem and then told by senior management, "Fix the problem and clean up the mess you made." Such an attitude often means IT has to fight for every penny it needs for its year 2000 activities. Even if IT bears the brunt of whatever belt-tightening is required to fund the internal system repairs, it isn't fair to expect IT to bear the entire

burden of helping business departments throughout the company cope with the year 2000 problems of their trading partners.

The situation often degenerates into a question of who will get stuck with an onerous task. Meanwhile, hardly anyone has bothered to talk to the marketing or public relations departments about the advantages a successful year 2000 effort might bring. That's particularly true in mature industries—such as banking, automobiles and food service, where there's relatively little "natural" growth—as opposed to new-technology industries that haven't yet saturated their respective markets.

Consider the typical growth strategy in a mature industry: It consists of grabbing market share from competitors through tactics such as massive advertising, price cuts, better quality and better service. If an extra 1% of market share translates into \$10 million in annual revenue and \$1 million in net profit, it's worth investing, say, \$500,000 in marketing to gain that 1%.

How does that translate into competitive advantage? Suppose you're one of three major competitors in the widget industry. All three companies are in about the same state of year 2000 readiness. Now suppose your company invests an extra \$500,000 to ensure that its key suppliers will be year 2000-compliant, while your competitors rely on the "don't-worry, we're working-on-it" letters from vendors. In the best-case scenario, come Jan. 1, everything will be working smoothly for you, while your competitors' business will be disrupted or not operating. Their loss will be your gain.

To succeed with that strategy, you must have your own computer systems under control and

must exert sufficient control over your trading partners to ensure their success. That may be practical with small vendors you can harass or with large vendors you can work with and trust, but not necessarily with your utility company, your bank or your telecommunications vendor. But an investment of funds can create a competitive advantage: The company with a backup

generator, redundant telecommunications vendors and a contingency plan to cope with banking disruptions will have an advantage over the company that has none.

What makes that perspective interesting is that it creates the opportunity for funding outside the IT department and the normal year 2000 project budget. As long as year 2000 is seen as an expensive nuisance caused by, and funded by, IT, other political forces within the organization will be looking for opportunities to cut the budget. But if you can convince the marketing department that a scenario such as the one described above is plausible, then it should be funding the \$500,000 to ensure that the company's business partners are truly year 2000-compliant.

Marketing might also create an advertising campaign to exploit the disruptions suffered by competitors, just as CompuServe did during America Online's recent

massive system overload a couple of years ago. Sadly, most organizations don't see that way; they continue to see year 2000 as nothing more than a nuisance created by their IT departments. But if your competitors have that mind-set, it creates an opportunity to get someone in senior management to see the light. ☐

Yourdon heads the year 2000 service at Custer Consortium in Arlington, Mass. His Internet address is ed@yourdon.com.

Investment
of funds
can create
a competitive
advantage.



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Dun & Bradstreet

How to Flip Out
a Web Flipper
(and Other Anti-
Poacher Tactics)
By Mary Brandel

HEADING OFF THE HEADHUNTERS

BRIAN FARRAR ALWAYS KNOWS when he's being raided. It's the way the phones ring from one cubicle to the next. When employees pick up the phone, their usual tone of voice subtly changes.

It's an old trick of the recruiter trade: Establish one IT worker's phone extension and then change the numbers sequentially to get neighboring peers: 801, 802, 803, for example.

Not exactly rocket science. But Farrar, who's president of IT consulting firm Metamor Technologies Inc. in Chicago, has decided not to jumble up his company's phone extensions. The way Farrar sees it, recruiters will find their way in, someday, somewhere, somehow.

Instead, the company employs as its best offense a good defense.

"You're better off making the work environment so attractive that people who get trimmed a.c. the ones who were going to get trimmed anyway," Farrar says.

So, in addition to offering competitive compensation, Metamor tries to offer a fun and casual work environment. "We have pinball machines, pool tables and even a 'payroll goddess,' who brings around the checks in costume," Farrar says.

With the information technology skills shortage at a record high, retention has become job 1 for IT managers. And nearly everyone agrees that happy employees are the best defense against aggressive recruiters.

"It's very difficult to defend yourself from people being contacted," says David Dell, research director at The Concorc Group, a consulting firm in Kingwood, Texas. "Once recruiters find one person who leaves, they've got word-of-mouth access to other people inside that company. It's much better to make sure the organization is the type of place people don't want to leave."

But what about lining up a good offense, too? In case you haven't noticed, IT recruiting has taken on the fervor of extreme sports. Particularly with the Internet, recruiters are finding unforeseen — and sometimes ethically questionable — ways to infiltrate corporate ranks.

"The gloves are off," says Chris Velisaris, a technical recruiting consultant at VIE Inc. in Chicago. "Recruiters are saying, 'I need people, and by any means necessary that's legal. I'm going to find them.'"

So, how can you make the recruiters' job just a little bit more difficult? "There are all kinds of ways employers can smarten up," says Fran Quittel, a San Francisco expert in high-tech careers and recruitment (and Computerworld's Career Adviser columnist).

For starters, she says, "Don't put all your employees' names on any Web site, and don't have a phone system you can tap in to at night to get a complete directory listing."

To recruiters, voice mail can be either a gold mine or their worst enemy. "If you don't have a specific name, you often can't get through," says Lina Fafard, a branch manager at Montgomery West, an executive search firm in Torrance, Calif. "Then, if you call the receptionist and ask for the director of the DR2 group, they'll say you need the name or we can't put you through."

Of course, there are ways around that, such as good old technical support,

"They're usually pretty free about giving out information," Fafard says.

On the other hand, voice-mail systems can yield lots of valuable information. "[Recruiters] can call after-hours and listen to voice mail, which gives the person's name," Farrar says. "Then, during regular business hours they call back and say, 'Hi, John Smith, we've heard a lot about you.' That's a cool thing if you're 23 years old."

On the Internet

But the new weapon of choice is the Internet. In fact, the best way to make your employees harder to find is to learn about the latest Internet recruiting techniques.

"I would focus on how employees are making themselves visible on the Net and how you can limit that," says Tracey Claybrooke, president of Claybrooke & Associates Inc., an Internet recruitment consulting firm in Tampa, Fla. Claybrooke also advises corporations on how to protect their Web sites from recruiters.

One suggestion is to attend a recruitment sourcing seminar, such as those held by Intelligent Search Technology Ltd. "I wouldn't send a recruiter, I'd send a security person," Quittel says.

At those seminars, you'll learn about Web flipping, newsgroup mining and sophisticated search techniques.

With Web flipping, recruiters use a search engine like AltaVista to find all the links associated with an employer's Web site.

"You say, 'Give me all the Web sites that are linked to Oracle.com.' Hopefully what you'll find are user groups, fan clubs of Oracle, private Web pages of people who work with Oracle, lists of all their friends who are Oracle programmers and home pages for all of them,"

ARE YOU AT RISK FOR RAIDING?

WHAT WE WORRY?

Despite the record high IT labor and skills market, Computerworld's 1999 Annual Hiring Forecast revealed that only half of IT managers say they're worried about external recruiters or placement agencies raiding their staff.

**52%
YES**

**48%
NO**

WHAT'S A BOSS TO DO?

To fight off corporate raiding, IT managers say they're investing most in the following defensive strategies:

- Increasing training
- Increasing or renewing salaries
- Providing aggressive bonus programs
- Allowing job/schedule flexibility

SOURCE: COMPUTERWORLD'S 1999 ANNUAL HIRING FORECAST, 1999, 1,000+ IT MGRS.

SHOW ME THE MONEY

Why do IT pros jump ship? Money is the No. 1 reason, say IT managers in our Annual Hiring Forecast. Other top job-hopping reasons: advancement opportunities, 73%; future direction of organization, 57%; corporate culture/environment, 57%; access to technology, 27%.

**74%
Compensation**

**73%
Opportunities for Advancement**



INTERNET RECRUITING CONSULTANT
IN CLUB: Many companies
visit Web sites.

says Carl Kutsmode, president of Tiburon Group, a recruitment firm in Chicago. "You might even get into a hidden Web page that has the entire employee directory because the programmer didn't bother to program that to be part of the overall security."

To foil Web flippers, companies should ask employees with personal Web pages not to link back to the corporate site, Claybrook says. "It should be company policy, with someone responsible for checking whether people are linked."

Similarly, recruiters are taught how to mine newsgroups to find specific names of employees at target companies. They just log in to a newsgroup and do a company domain search, which pulls together a quick list of every contributor from the target company.

To avoid exposure, ask your employees who participate in newsgroups to use Web-based e-mail so recruiters can't identify which company they work for, Claybrook suggests.

That tactic will only go so far, however. Recruiters like Kutsmode hang out in newsgroups merely to network. "We'll look at people who are frequently responding and send them an e-mail saying, 'We monitor this newsgroup, and you seem to be an expert. Perhaps you could suggest other newsgroups to talk to people like yourself. And by the way, here's an opportunity, if you'd like to pass it along to friends!'"

Kutsmode does the same with authors of articles and white papers published on the Web.

"We search for articles written by people with specific titles," he says. "We've been very successful developing ongoing referral relationships that way."

Low-Tech Methods

Of course, not all recruiting techniques are so high-tech. For example, did you know there's a black market for company phone directories? Fafard says street prices range from \$50 to \$100 a pop. You could keep a tighter rein on those directories, but a good severance policy might do the trick.

"I've had directories mailed to me anonymously because the employee was mad at the company for not giving them something or maybe they got laid off," Fafard says.

And there are some very simple measures you can take. For example, Metasoor doesn't post its organizational chart online, because it would quickly reveal which employees have which skills. The company also doesn't post employee names on its Web sites, just state representatives.

"Just put a 'Contact us' with one name," Claybrook says. And if your site publishes white papers written by employees, don't put the specific author's name on it, she adds.

Another suggestion is to be courteous when recruiters make their sales calls. "If you hang up on a recruiter, forget it," Fafard says. "These days, you're either a client or a recruit-from."

Certainly there are recruitment tactics you can't do anything about. "It's like trying to stop the ocean," Quinlan says. "For instance, I stand next to you at a conference, and you have a badge on, and I look you up in Big Yellow. Some of it is totally serendipitous."

Sleeping With the Enemy?

And you don't always know who the enemy is. "What I find offensive is the recruiter who wants to do business with us, and then they start stealing our employees," says Diane Thom, human resources manager for the department of information services at Comerica Inc. in Auburn Hills, Mich. "They're feeding us with candidates while they're wooing our employees away."

Just the same, Thom is a true non-interventionist. For example, Comerica keeps its phone list online. "We have it

[on Lotus Notes] and want it to be that way," she says. "I don't think you can ever make a people people invisible. We concentrate on making it so comfortable for them to be here that they may listen and hear what's going on, but we're coming out in the long run."

Because certainly, offensive strategies can backfire. Take the policy of not giving out employee names over the phone. "I was called by a sales rep, and he garbled his last name," Kutsmode says. "When I called back and asked to speak with 'Steve,' the receptionist wouldn't connect me. Here he was, trying to tell me something — I wasn't even calling to recruit him."

Similarly, some companies create nonintuitive e-mail addresses so their employees are more difficult to reach. "But we don't think it's worth making people's e-mail addresses look silly," Farrar says. You also risk sending employees the wrong message.

"If you do things that say to the employee, 'They're trying to keep me off the market,' they're more likely to go see what they're worth," he adds.

The consensus among employers is that if recruiters work hard enough, they'll find your employees, perhaps your best ones.

But by creating a great defense and by taking a few offensive measures, you can at least feel satisfied you haven't given them the keys to the castle.

"It's really important to take care of your employees and make sure that if you put them in a room full of recruiters, they'll say, 'I love my job,'" Fafard says. "If not, you deserve to be raided."

Brandel is a freelance writer and editor in Norfolk, Mass. She can be reached at brandel@cwi.com.

THE TABLES TURNED: GETTING NOTICED BY RECRUITERS

So, as a skilled and in-demand IT professional, you find that you do want to be noticed by a recruiter. No problem. Even if your boss has gone into defensive mode, it isn't that hard to draw attention to yourself, particularly with the Internet. Here are some tips for getting the exposure you crave:

■ Write white papers or other relevant articles, include your byline, and publish them on the Internet.

■ Join and contribute to newsgroups.

■ Put your resume on one of the hot job sites. Those listed currently: Monster Board.

■ Career Mosaic and the Online Career Center.

■ Create your own Web page and include links to other sites where your peers hang out.

■ Join professional groups and see if they have career centers with Web sites that list members; begin corresponding.

■ Tell your friends to mention your name the next time they get a phone call from a headhunter.

■ Find out whether your alma mater has a Web site just for alumni and post your resume and other job-related information there.

— Mary Brandel

MS. MIS/KATHLEEN MELYMUKA

Both sexes suffer in genderless IT

WHAT DO YOU LEAVE at the door when you go to work? That's the question I and other participants had been asked to ponder during a session on work and life at a recent conference for women in technology. The first few responses were ho-hum: Roles as mothers, daughters and wives got jettisoned right off the bat. But it started getting interesting when one woman said she left her right brain at the door: "I'm not paid to be intuitive; I'm paid to be logical," she said. Then, one of the youngest women in the room came right out and said it: "I leave my gender at the door."

The people I work with don't look at me as a woman," she explained. "They look at me as a genderless person, and I don't like that."

She said she wanted the people in her office, most of whom are men, to look at her as a woman — to respond to her as a whole person and not just a technology-specialist position description.

A minute later, the only man in the room surprised everyone: "I leave my heart at the door," he said.

From the Heart

He recounted how sometimes at work a young woman will remind him of his daughter, or an older woman will remind him of his mother, and he wants to relate to them that way and talk from the heart

like a dad to a daughter or a son to a mom — maybe even give them a hug. "But I can't respond to them that way," he said, because it wouldn't be politically correct. He said he feels he's not supposed to think of them as women.

The implication was clear: We've spent the past 20 years trying to establish a sex-blind information technology workplace, only to discover that what we've created is a sometimes-pitching, heart-wringing, life-defying monstrosity.

And women aren't the only victims: A genderless IT environment is every bit as debilitating to men.

Later, I talked with two women who have written extensively about this kind of stuff. Judy B. Rosener is a professor at the Graduate School

of Management at the University of California at Irvine and author of *America's Competitive Secret: Utilizing Women as a Management Strategy* (Oxford University Press Inc., 1995).

Janet C. Wylie is president-elect of Women in Technology, (www.womenintechology.com), a women's advocacy group; president and CEO of HCL James Martin Inc., an IT consulting firm in Fairfax, Va.; and author of *Chapters and Choices: How Women Succeed in Today's Knowledge-based Businesses* (CEW Press, 1996).

Their Own Choice

Rosener and Wylie said being "genderless" is seldom forced on women; it's usually a choice they make, although not necessarily consciously.

"The women themselves determine how they're viewed," Rosener explained. "That young woman sounds like she's been giving a message: Don't look at me as a woman."

Wylie explained that in IT, most women's role models have been men. As a result, "They sometimes don't know what to do with their own femininity, and they assume — wrongly — that they have to leave [their] gender at the door."

This sets in motion what she calls a "do-loop" of confusion and political correctness.

"Men don't know how to treat women who are afraid to be women," she said.

Wylie acknowledged that she fell into this trap herself years ago. "I used to go through unbelievable gyrations not to call attention to the fact I was a woman," she said.

But the result of that behavior is that everyone loses, including the business. By denying their femaleness, women inhibit the very characteristics that make them natural leaders: the ability to listen, to empathize and to do many things at once and the facility for developing personal relationships with coworkers.

"These are things that really matter," Wylie said, "especially in businesses where your assets are people."

When IT women deny their identity and men walk around on eggshells, IT teams can look like dysfunctional families, projects miss the diversity of viewpoint that breeds out-of-the-box thinking, and customer service can seem more in-your-face than caring.

Figured It Out

Wylie said it took her years, but she finally figured out that leaving her gender at the door meant leaving behind a lot of richness and experience.

"I'm really a good woman," she said, "but I'm not a good man."

"I finally found out that the more I was myself, the better manager and leader I was, the more comfortable I was with myself, and the more comfortable everyone is with me," she said.

The first step in this transformation is to lighten up. "I will make a

self-deprecating remark to show I'm not real sensitive," she said. "Humor is a great ice-breaker."

Women can't leave their gender at the door any more than men can leave their hormones at the door, Rosener said. "The question is, what do you do with it?"

The answer? "You say, 'I am who I am: I'm female, and I'm competent, and I'm not going to pretend that I'm not either one.'"



JANET C. WYLIE IS Computerworld's senior editor, management. Contact her at jwylie@computerworld.com.

BRIEFS

Women Showing Steady Growth on Several IT Fronts

Hiring

The hiring outlook will be skewed in favor of women in the future, especially in technology jobs, according to John Challenger, CEO of Challenger, Gray & Christmas Inc., a Chicago-based recruiting firm.

Women can expect to be the greatest gainers in high-growth jobs such as database administration, computer support specialist and

computer engineer, all of which are projected to more than double by 2006. The firm bases its predictions on anecdotal evidence and the fact that women have been piling ahead of men in education, holding 54% of bachelor's degrees among 20- to 29-year-olds, according to the U.S. Bureau of the Census.

And that gap may be widening: Among 1997 high school graduates,

70% of women went on to college compared with only 64% of men.

Although recent reports show women avoiding computer science courses in droves, Challenger said course selection is less important than a comfort level with technology and a degree. "We're not just talking about math and engineering," he said. "Jobs like Web site managers and animation engineers combine various disciplines: the graphic design and the ability to write well. It's comfort with technology and the ability to use and adapt to the technical demands that's the key, and we're seeing more women take advantage of the incredible demand out there."

Project Management

Women seem to be signing up in

the key field of IT project management, where technical expertise is less important than managerial acumen.

ABT Corp., a New York software firm that sponsors a major project management conference annually, said the percentage of conference attendees who are women has increased steadily, from 37.9% in 1996 to 40.5% in 1997 and 43.6% last year.

The Web

Women also are warming up to the Web. Although outnumbered 2-to-1 by men in 1996, female Web users are expected to constitute 40% of the online population by next year, according to the Internet Advertising Bureau.

— Compiled by Kathleen Melymuka

SNAPSHOT

Year 2000 Woes

How serious will the year 2000 problem be for the following systems in your organization? (1 = no problem, 5 = serious problem)

SYSTEM	SCORE
Operating system	2.8
Database system	2.6
Application software	2.4
Hardware	2.2
Network	2.0

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EYES ON THE

Getting different kinds of users to play on the same field is the biggest challenge in rolling out customer relationship management systems
By Alice LaPlante

FOR 15 YEARS, Kevin Morey has taken his cues from little slips of paper. Morey is an appliance repairman working in the field, directed from job to job by dispatch orders that contain minimal data about each customer's problem.

"The lack of accurate information is the single biggest source of frustration for field technicians," he says. "Sometimes you don't even have the right address. It makes your job a lot harder."

Sounds like a problem well-suited to an information technology solution. But Morey also knows how resistant to change people can be — especially individuals like himself, who are used to working with minimal supervision and loosely enforced rules.

"People develop their own ways of working out in the field. They don't necessarily understand why they have to change," Morey says. Yet his job involves introducing a huge change to his former co-workers. Morey is part of a cross-functional team implementing a new Vantive Corp. customer relationship management (CRM) system being rolled out by his employer, Chicago-based Appliance & Electronics Signature Service (AESS). The system will give the appliance-repair giant a single, comprehensive view of all customer relationships.

Forget notions of traditional field or sales force automation.

CRM systems like the one AESS is implementing use a more holistic approach. CRM systems incorporate features found in contact management, sales automation, call center management software and more. Specifically, CRM provides a comprehensive view of the relationship between a business and its customer.

For example, at Everen Securities Inc., a Chicago-based investment firm serving institutional clients, an account can involve many different professionals. For instance, Everen sales representatives are responsible for selling financial products and services to the client's portfolio managers. Research analysts are charged with keeping an eye on that client's senior executives to track stock performance. Securities traders check in with industry sources when happen to work for the client.

What's tricky — whether you sell securities or fix washing machines — is that so many employees need to cooperate to provide a service.

There are call center workers who write down customer orders, directions or complaints. Then there are salespeople in the field with an eye on commissions, heads-down telemarketers responsible for contacting a certain number of prospects per hour and customer-service troubleshooters who are on the firing line when any link in that chain breaks.

There are four components to a successful CRM installation — and technology is the least of them, says Mike

Levinger, senior vice president of Technology Solutions Co., a Chicago-based consulting firm specializing in CRM installations. The top three priorities? "Getting the business process right, making sure your staff has the appropriate skills to handle their newly defined roles and — perhaps most important — getting the necessary members of the organization to cooperate," he says.

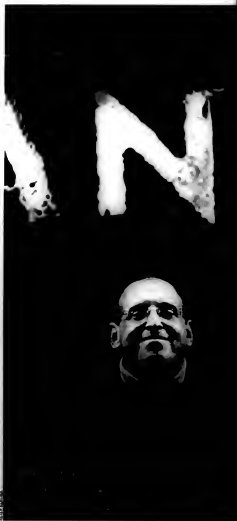
Here are three golden rules for getting everyone to cooperate in a CRM system:

1. Show the Benefits

Senior managers at accounting services firm Automated Data Processing Inc. (ADP) in Roseland, N.J., were thrilled at projections that a new CRM system would cut company costs by \$450 million. But that wasn't the argument Howard Koenig used when he faced resistance from call center workers, sales representatives and sales managers.

Call center workers were worried about the increased stress of having to enter much more detailed data whenever a customer called — and also about Big Brother-type monitoring of their every move. Salespeople were worried that automating the submission of new customer contracts would get in the way of closing deals.

So rather than point out how the new system would help the company, Koenig focused on allaying fears. "We had to demonstrate that the technology was going to make their jobs better," says Koenig, corporate vice president of operations



CUSTOMER

and client services at ADP.

He showed call center workers how their managers would be able to better anticipate peak call times, improving staff scheduling. He showed them how having a history of any single customer's interactions with the firm would lead to less-stressful encounters.

Sales representatives, on the other hand, never would have to make a call without knowing about any outstanding issues on an account, Koenig says. And salespeople, who wouldn't get their commissions until a contract was officially processed, could track the progress of a deal through the system.

In addition to meeting company objectives, turnover among call center workers has been cut by more than 10% — "We believe the job is actually less stressful," Koenig says — and sales representatives have improved the retention of existing accounts by 5%.

2. Show Them the Money

Indeed, Joe Murray, a principal at KPMG Peat Marwick LLP's customer management practice in Irvine, Calif., says companies should think about providing financial incentives if they want users to adopt CRM systems. Many experts also advise modifying compensation structures to complement the new way of doing things.

"Show them how it's going to put money in their pocket. Structure your compensation-measurement schemes in such a way that people must go along," says Scott Trudo, president of VBS Consulting Inc. in Amherst, N.H., which helps sales teams make the cultural leap to new systems. For example, rather than paying a flat commission for any contract that gets signed, a company can reward a salesperson with a higher-percentage commission for re-signing a "repeat" customer — because it's more cost-effective to keep a cus-

tomers than attract a new one. Or if your firm is trying to convince loners to work as part of a group, there must be some reward for being a team player.

At Everen, bonuses were given employees voted "most helpful" by a customer account. Customers could cast their votes only through the CRM system.

At eye-care products company Bausch & Lomb Inc. in Rochester, N.Y., the CRM system wasn't just giving the sales reps an automation tool — it also turned the call center staff into an auxiliary sales force.

Previously, call center workers simply keyed data into an order-entry system whenever a store chain or optician called to buy more products. With the help of Technology Solutions, Bausch & Lomb revamped its sales organizational structure. With the Vanite system, all customer records were kept online; all contacts with each account were tracked. Call center workers were given a broad range of new responsibilities. Rather than simply take orders, they answered questions by using online technical manuals they could reach with a hot key. They also used each incoming call as an opportunity to sell more Bausch & Lomb products.

If an optometrist called to order contact lenses, says Robert Colangelo, corporate vice president and CIO, "our call center people could look at that customer's record and remind him or her of any products they might need — saline solution, for example."

That was a major change, Colangelo says. Call center workers needed extensive training to learn basic sales techniques, and their compensation packages were revamped to reflect the new responsibilities. Call center workers now have monthly sales quotas — just like external salespeople — and their monthly pay re-

fects how effective they are at selling Bausch & Lomb products. So far, it's working. "They began exceeding their sales targets almost immediately after the new system was installed," Colangelo says.

3. Walk in Another's Shoes

Just about any IT initiative requires cross-functional teams to make a project fly. But that's critical in CRM installations, where once-autonomous employees such as field workers or sales reps feel they're relinquishing valuable control to other employees — and need to feel confident they won't be let down.

At AES, Jim Livesay, director of product service, found out very quickly that he needed to staff the new centralized telephone control centers — which assumed responsibility for all pre- and post-service call customer support from 135 local offices — with workers who possessed considerably higher skills than a typical telephone operator.

"Our field people wouldn't have accepted the change unless there were truly knowledgeable people on the other end of the telephone," Livesay says. So he took some of his best field workers and managers and placed them in the control centers. "I made it a promotion for them," he says.

That sort of strategy can work brilliantly, says Allan Alexopoulos, director of industry solutions at CRM software maker Clarify Inc. in San Jose, Calif. "Identify the individuals who are likely to resist the new system most strenuously and make them a key part of the new system," he says. ▀

LaPlante is a freelance writer in Woodside, Calif. Her book, *Playing for Profit: How Digital Entertainment is Turning Child's Play into Big Business*, will be published in May by John Wiley & Sons Inc.

The lack of accurate information is the single biggest source of frustration for field technicians.

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DRIVING THE DEAL/JOE AUER

Put Onus for Results On the Outsourcer

WHEN YOU HIRE an outsourcer, who's responsible for the tasks that are unknown at contracting time but surface later? As outsourcing grows in popularity, we need to have a clear answer. If we accept the supplier's contract, we're the ones who are probably responsible — because a typical outsourcing supplier's contract includes a "statement of work" section that lists all the supplier's responsibilities. Obviously, this is a great deal for the supplier. When something unexpected comes up, the supplier can say, "It's not on my list. We can do this, but here's how much it will cost you."

The tip? Develop a performance-based contract, which is one that commits the supplier to final results, not interim tasks. Have the contract state that any task that falls within this scope, even if not listed, is the supplier's responsibility — up to and including the final results. You will reduce your exposure and put the final responsibility where it belongs — with the supplier.

Users Bugging You? Try 'Meet-or-Best Pricing' for PCs

One of the headaches information technology managers face is the know-it-all user. After the IT managers negoti-

ate a good companywide deal for PCs that takes into account complete life cycle costs, they inevitably get calls from users who complain they can walk down the street to PCs-R-Us and get the same boot for a whole lot less. Or, they saw the same computer in the Sunday newspaper available through mail-order at a fraction of the price. You can explain until you're blue in the face, but nothing you say can convince these users that the cost of the equipment alone is only part of the picture, and the deal you have addresses life cycle costs such as support and installation.

What can you do? Let your

suppliers help you out.

Chances are they are value-added resellers (VARs). If the VARs are forced to deal with this issue and want to make you, the IT manager, happy, they can agree to "meet-or-best pricing."

It works like this: If a complaining user can provide documentation of a lower price (like an ad) from another provider, the VAR meets that price for that piece of equipment and the IT manager owes the services separately to the end user.

There's really not much risk to the VAR, as there usually aren't many takers out there in the complaining user commu-

nity. The PR value can be significant and it can be a great marketing pitch for both the VAR and the IT manager.

VARs aren't yet offering this simple and beneficial option during negotiations, so the tip here is: You have to ask. If you're a beleaguered IT manager, you should make it part of the deal.

Lease vs. Buy Drives More Complicated

Leasing IT assets is relatively common in the corporate world, but it has become more complex with the shift to a distributed computing environment. These days, we need to avoid relying solely on financial analysis to make a decision (even though we still should conduct a cash-flow-based analysis).

Just as important are some nonmathematical factors, such as the corporate treasury's strategic direction. If you're looking to reduce on-book debt and leasing is the way to go, leasing can also work if your company needs to update its technology frequently to remain on the cutting edge.

However, other considerations come into play. Leases

restrict how equipment is used, upgraded, changed or moved, among other things. Leases can also require you to restore the equipment to its original state prior to return, or pay a high replacement cost if the equipment is lost.

If you're a centralized, top-down-managed kind of com-

pany, leasing would fit well with your corporate personality. But if you have a decentralized and autonomous management structure, it's almost impossible to track the assets and administer the leases effectively. Purchasing the equipment could be the way to go. There are a variety of tools an IT manager can use to analyze all the criteria in the lease-

or-purchase decision (I only touched on a few points here). Which route you choose isn't as important as the care and thoroughness used in the evaluation, negotiation and documentation.

Remember, a fully developed analysis that takes a comprehensive set of factors into account will help drive a better decision for your company. ■



JIM ANKO is president of International Computer Negotiators Inc. (www.icnbi.com), a Winter Park, Fla., consultancy that advises clients on high-tech procurement. ICN negotiates for CAUCUS, The Association of High-Tech Acquisition Professionals. Contact him at janko@icnbi.com.

WORKSTYLES

What It's Like to Work at ... CUNA Mutual Group

Interviewer: Jim Bates, a systems manager at the insurance firm.
Location: Madison, Wis., in an agricultural area with a concentration of dairy farms, about an hour west of Milwaukee. The CUNA campus is about five miles west of the state capital building.
IT employees: Just more than 400.
Employees (and users): 4,700.
Dress: Business casual.
Dress-down Fridays? No, discontinued because a lot of visitors come to the complex and the company wants to maintain a professional image.
Workday: Information technology

staff members have flexible schedules. Some work five days one week and four days the next. Some work half-days on Fridays during the summer. A typical day is probably 8 a.m. to 4:30 p.m.
Office layout: An open layout with cubicles and partitions, between desks. The company is spread across three separate buildings in a corporate campus.
Office environment: Basic beige. Any windows? Yes. The IT department overlooks an atrium in the center of the building on there are windows of around. The atrium space features tables, chairs, trees,

a garden and skylights.

Equipment: An assortment of Pentium-based IBM and Dell, some laptops.

Ergonomic devices: People are encouraged to build their work environments with whatever they need. Most people carry beepers? It's a minority, but some do.

Does staff telecommute? Some employees do it once per week.

On-site day care? Company sponsors a day-care center that's two blocks away. It accommodates people's work schedules.

In-house cafeteria/food service?

Yes. Rating (scale of 1 to 10, with 10 the best): 8. Described as "an excellent cafeteria," which is used as a selling point when recruiting new employees.

Favorite dish in the cafeteria: Sizzling salads — employees make their own salads with shrimp, beef or other "sizzling" meat.
Free refreshments: Water; coffee is

available for 50 cents.

Vending machines: Candy, soda and snackish machines.

Favorite vending item: Is the IT department, Mountain Dew. Cost per soda: 80 cents.
Last companywide/department party: Christmas party at the local Marriott; featured a disc jockey.

Would employees feel comfortable e-mailing the CEO? He encourages it and holds a quarterly company-wide meeting to update employees on the business in person.
Quote: "I think there's a friendly atmosphere here. I keep Starbucks in my candy dish, and people are stopping by here all the time. And that goes on all over the company. It's a place where people work hard, but there's also respect for people's lives outside of work. There's a lot of flexibility, and the company doesn't insist on long hours. I'd like to see a little more color around the place — the decor could be updated a bit."

But it's generally a positive, upbeat place."

Where CIOs Surf for Fun

Most CIOs are heavy online Web users that they go online for personal use outside the office, but about 10% log off completely when they leave work, according to a survey of 1,400 CIOs by IBM Consulting Inc. in Maple Park, Ill. Of the nearly 90% who do surf the Web during leisure hours, three in four research topics of special interest; almost a third make travel reservations (37%) or buy computer equipment (30%). Just slightly less buy small home use books and CDs (25%) or use the Internet to manage their financial investments (20%). CIOs traveled more at companies with more than 100 employees.

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TECHNOLOGY

HP TOOLS HANDLE WEB ACCESS

Hewlett-Packard announces software that will let Web administrators at corporations and Internet providers set priority levels and tiered-usage policies for Web access. ■ 72

QUICKSTUDY: LOAD BALANCING

Nothing ticks off end users like a "server busy" message. Load-balancing software can help to keep them happy by solving the dreaded server overload problem. ■ 76

CROSS-PLATFORM LINUX? NOT YET

Vendors are promising to port Linux across a variety of hardware platforms, such as Merced and the RS/6000. But before adopting it, users want to see good performance, cooperation between hardware vendors and the open-source community, as well as a good reason to move away from lower-priced Intel-based hardware. ■ 70

SEEKING ERP ALTERNATIVES

Buying company Frederick Atkins Inc. uses specialized tools rather than ERP systems to track its users, but finds even they take time to implement. ■ 68

LINKING XML, WEB TOOLS

OnDisplay Inc. has added Extensible Markup Language support to its Web business integration tool. That should help OnDisplay customers combine supplier catalogs, import content from other Web sites and facilitate data conversion in enterprise resource planning implementations. ■ 68

PORTALS STORMING IN

Yahoo, Lycos, Infoseek, Excite, MSN and their brethren aim to point you to all the links and news you need. We look at three portals to see how well they can be personalized and to get a feel for their differences. ■ 74

EMC EASES BOTTLENECK

EMC announced a new Fibre Channel switch that could eliminate bottlenecks in many data centers by quadrupling the number of servers that can link to EMC's Symmetrix disk array. ■ 70

FLASHBACK: COBOL!

In 1959, a group of users, academics and manufacturers created a business programming language. They called it Cobol. For the next two decades, more programs were written in Cobol than in any other language. ■ 82

MORE

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IBM ONCE AGAIN takes top honors in our software support survey. Microsoft and Computer Associates International fall to the bottom. In a survey of 151 IT managers, we learned that good telephone support still ranks high on the service list but is an Achilles heel for Microsoft and lowest-ranked CA. Another tip for software vendors: Reorganize your Web site so support topics are easier to find.

78

LOGISTICS APP FILLS ERP GAP

RockPort software's overseas, contracting abilities a better fit for N.Y. cooperative

BY CRAIG STEDMAN

LIKE OTHER companies that buy products from hundreds or even thousands of overseas contract manufacturers, Frederick Atkins Inc. needed to wiring efficiencies out of its purchasing and shipping operations.

The New York company, a cooperative that buys clothes and home goods for about 30 regional retail chains, looked at enterprise resource planning (ERP) systems such as SAP AG's R/3. But it decided specialized global logistics software from RockPort Trade Systems Inc. better fit its need to group orders from various retailers into one big contract that's then filled by numerous suppliers in the Far East.

Developed by a handful of small vendors, applications such as RockPort's provide product sourcing and contracting capabilities that typically aren't built in to ERP systems. But installing them poses some of the same challenges for users as an ERP project.

Frederick Atkins, which buys about \$200 million worth of products annually for its retail clients, switched to RockPort's software early last year to replace a pair of homegrown

purchasing applications that weren't compatible and lacked year 2000 support and features such as cargo tracking.

The software is used by about 100 Frederick Atkins merchandise managers, who shepherd the products it buys from design through shipment. Information is exchanged with foreign freight forwarders and sourcing agents via electronic data interchange links into the Unix-based RockPort system.

Len Bellezza, the company's vice president of logistics, said the software has helped Frederick Atkins cut costs by a double-digit percentage in that area by eliminating the need to have people manually track shipments and type in lists of incoming products for its warehouses.

Tough Row

But getting there wasn't a simple matter. An eight-person team needed six months to install RockPort's software, and Bellezza said the work went that fast only because Frederick Atkins was "very dedicated to moving forward quickly."

As with an ERP project, much of the work involved making sure the software and the company's business procedures meshed, Bellezza said.

End users needed five days of training and a month of hands-on use to master the software — and the job still wasn't finished. A custom front-end application was installed last fall to simplify the system, said John Adams, who manages information services at Frederick Atkins.

Even now, Bellezza said, interface work continues in order to improve the flow of data through the company's supply chain to the RockPort system

and then on to PeopleSoft Inc. financial applications.

RockPort, in Gloucester, Mass., claims about 25 users have gone live with its RockBlocks software, which costs \$500,000 to \$3 million. Others with similar software include Minneapolis-based Retek Information Systems Inc.

John Fontanella, an analyst at AMR Research Inc. in Boston, said retail is the most natural fit for these applications and is also "probably the vertical industry that's most underserved by ERP systems."

But user demand is just emerging. Sales of international trade and logistics software totaled only about \$60 million last year, he said. ■



Tool Brings Data Together

Brokers speed data delivery to browser

BY STEWART DEEN

BroadQuest Inc. last week introduced BroadQuest 2.0, an application that offers access to customer data residing in disparate storerooms. The tool blends live customer data from front- and back-office customer relationship management applications in one place and offers users a browser-based view into the data.

The tool gives users in different branches of a company a complete view of the firm's dealings with a given customer. That's an advance, because currently sales and repair databases, for example, often aren't linked, and looking at those records can take frustrating minutes.

Broker-Based

Analysts said BroadQuest's broker-based architecture is fairly unusual. It includes data servers (or brokers) that sit between end users and the underlying company database. The brokers communicate with application data sources, such as databases or customer relationship management applications, and keep a cache of data extracted from them for quick reference.

"The broker architecture recognizes that different groups [within a company] have installed different systems and need different mechanisms to interoperate among them," said Geoffrey Bock, an analyst at Patricia Seybold Group in Boston.

Wells Fargo & Co. is testing BroadQuest 2.0 as a way to link customer records residing in multiple back process and product databases.

Mike Azevedo, senior vice president for small business support services at Wells Fargo in San Francisco, said, "This will let everyday bankers go in and get information about customers without having to depend on a database administrator." BroadQuest 2.0 is available now; pricing starts at \$200,000. ■

Integration Software Links XML to Supply Chain

BY RYAN COLLETT

A San Ramon, Calif.-based software company is using the Extensible Markup Language (XML) to push the envelope of supply-chain integration tools.

OnDisplay Inc. last week began offering XML support for its stand-alone electronic business integration software. XML is a Web-based formatting language that allows users to categorize and structure data that's transmitted over the Internet.

OnDisplay's integration

software, called CenterStage, helps companies integrate supplier catalogs, bring in content from other Web sites and facilitate data conversion in enterprise resource planning (ERP) implementations.

What sets CenterStage apart from tools from integration software vendors like WebMethods Inc. and Veeva Systems Inc. is its ability to extract content from structured and unstructured sources such as HTML pages, legacy reports or flat files, said Bob Parker, an

analyst at AMR Research Inc. in Boston. The information then is formatted into an application or database or is output to an HTML file.

With XML, a company can tag brand and price information to send to another company's order entry system without the need for an electronic data interchange system. Such interfaces are important: Aberdeen Group Inc. in Boston estimates that one-third of the time information technology departments spend supporting

Internet procurement systems goes to maintaining and developing interfaces to supplier systems and internal systems.

OnDisplay software is packaged with procurement applications such as RightWorks, Clarus and TradeEx but can be purchased individually and integrated with a company's ERP or procurement systems. Licenses cost between \$50,000 and \$200,000, based on the number of servers and applications being integrated. ■

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BRIEFS

Mainframe Market Share



New Web PC

Austin, Texas-based iDOT.com Inc. has announced a PC for the Web. The company said the system includes a 450-MHz Pentium III processor, 32M bytes of synchronous dynamic RAM, a 4.30-GB hard drive and a 40-speed CD-ROM drive. Pricing starts at \$999. www.idot.com

Wyse Ships Thin Client

Wyse Technology Inc. is shipping a thin-client computer based on Windows CE. Called WyseWin 3350SE, the terminal has a 200-MHz Motorola processor from Cyrix Corp. It was designed to support multimedia applications, according to San Jose, Calif.-based Wyse. A system with 16 remote terminal emulations costs \$749. www.wyse.com

Sony Set-Top Videoconferencing

Sony Electronics Inc. has announced a set-top videoconferencing system. Set to ship in June, the \$4,995 Sony PCS-1500 supports the H.323 standard, which allows integrated Session Digital Network-based videoconferencing. www.sony.com

LINUX-FOR-ALL
FACES OBSTACLES

Even if vendors succeed in porting it to every platform, users may not care

BY DAVID DREWSEN

WHAT a dream: A free, reliable operating system that runs the same applications everywhere you want it to. As Linux is ported to more hardware platforms, that dream seems to be coming true, but it hasn't yet—most by a long shot. Information technology managers and consultants are concerned about the availability of drivers, the ability of commercial vendors to cooperate with the open-source community that develops Linux, the preference of many Linux users for low-cost Intel-based hardware and the potential that Linux could fragment as it expands to proprietary platforms.

Even an IT manager who said he would love to see cross-platform Linux succeed is being realistic. "This could be the one Unix that unifies things that people have been

looking for for 20 years," said Tom Stoddard, a systems administrator at aerospace and materials plant B. F. Goodrich Co. in Grand Rapids, Mich.

But the prospect of Linux on PA-RISC, which Hewlett-Packard Co. has promised but not set a firm release date for, doesn't mean that Stoddard will necessarily replace HP-UX. Applications will not only have to run at least as well as on HP-UX, he said, but he also needs reassurance from either HP or the Linux community that hardware drivers will be as available as they are on HP-UX.

Rather than do the ports in-house, Intel Corp., IBM and HP have all said that they will support developers in the Linux community with information and staff.

But because open-source developers aren't the vendors' employees, they can't be controlled as closely, which makes it less certain a Linux port will match the vendor's strategy,

said Sandra Potter, an analyst at Aberdeen Group Inc. in Boston.

Jeffrey Gluck, a spokesman at IBM's RS/6000 division, acknowledged that IBM is new to the open-source development model and that how the process will turn out it is an open question.

Potter said that although many vendor executives know how much damage proprietary

implementations did to the Unix market by killing compatibility among various flavors of Unix, they may still have trouble preventing the same from happening to Linux.

Larry Augustin, CEO of Linux vendor VA Research Inc. in Mountain View, Calif., said that because Linux is free and the source code is open, developers can work in any innovations others come up with.

Rather than fragmenting, Linux can absorb all of its splintered implementations into a greater whole, Augustin said. VA Research is coordinating Intel's effort to port Linux to the IA-64 (Merced) chip.

Intel has been the dominant platform for Linux so far, said George Weiss, an analyst at Gartner Group Inc. in Stamford, Conn. He said vendors of RISC chips such as IBM and HP may find little market for their Linux ports because users who adopt Linux are often looking to save money.

Vince Bertone, MIS director at Miteq Inc., a Happonge, N.Y., company that makes components for satellites, said he isn't intrigued by the possibility that Linux will run on PA-RISC machines.

To expand Linux's presence at Miteq, Bertone said, he would just buy more cheap Intel hardware that not only performs well but also saves more money. ■

Linux Everywhere

Linux runs on several platforms already and is headed for several more, making it a versatile operating system

ALREADY RUNS ON

- Intel, AMD, Cyrix X86
- Digital Alpha
- UltraSPARC
- PowerPC
- Motorola 68000
- VAX
- PalmPilot

PORT UNDER WAY

- IA-64 (Merced)
- ARM
- MIPS
- PA-RISC
- RS/6000

EMC Announces New Fibre Channel Switch

Quadruples servers that can link to Symmetrix arrays

BY NANCY MILLER

Hoping to break data-storage bottlenecks in many Fortune 500 data centers, EMC Corp. has announced a Fibre Channel switch that quadruples the number of servers that can link to its flagship Symmetrix disk array.

"Switching technology is what will really drive storage density. Right now we seem to run out of connection ability before we run out the ability to add memory or disk," said Ted Keller, a manager of resource management at freight company Yellow Corp. in Overland Park, Kan.

The new EMC switch is called Connectrix and com-

prises one or two 32-port Fibre Channel directors from McData Corp. in Broomfield, Colo. It offers centralized management, remote diagnostics and support for both Windows NT and Solaris. Pricing starts at about \$300,000.

"EMC is taking big steps to move storage networking along its way," said Nick Allen, an analyst at Gartner Group Inc. in Stamford, Conn. "But I doubt they'll be able to sustain [Connectrix's] high level of pricing."

He pointed out that although Hopkinton, Mass.-based EMC is proposing switch pricing of at least \$4,000 per port, competitors are offering per-port

charges in the \$1,500 range.

EMC also announced six Symmetrix arrays that offer increased capacities and new microcode that boosts performance and the maximum number of logical volumes from 1,024 to 4,096. The 3930, for open systems and PC LANs, and the 9903, for mainframes, support up to 9.3T bytes; other models support less.

"A [single-system] 9T-byte capacity does sound startling at first. But we've got boxes to-day that are as big as our entire disk farm four years ago," Yellow's Keller said. He already has seven Symmetrix arrays and said annual storage growth for his mainframe and Unix

systems is 30% and 60%, respectively.

EMC is achieving the new capacity heights in part by incorporating the latest 360-byte drives. But it isn't the first to pair the drives with Fibre Channel-attached systems.

Arcticon Inc. in Carlsbad, Calif., announced its support for the drives in January.

The new Connectrix switch and Symmetrix arrays are part of EMC's storage-area network (SAN) strategy.

In general, a SAN takes storage off isolated server buses and places it on a shared, high-speed I/O pipeline such as Fibre Channel. SANs are like back-end LANs that can incorporate network devices such as hubs and switches.

Some promised benefits of SANs are easier information sharing, faster access to data and increased availability of front-end LANs and WANs. ■



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BRIEFS

Mobile Management
Tool for CE, Palm

Mobile Automation Inc. this month plans to ship Mobile Automation 3.0, management software for mobile systems. The Los Angeles company said the tool works on Windows 95, 98, NT and CE and Palm Computing's PalmPilot operating systems. It was designed to work with low-bandwidth, intermittent connections.

The server costs \$4,995, pricing per node for 500 users is \$95. www.mobileautomation.com

Boca Has Fax/Modem
For Power Mac G3

Boca Robot, Fla.-based Boca Research Inc. has a new fax/modem for Apple Computer Inc.'s Power Macintosh G3 minitowers. Calling the TelePort Internet SSK Fax/Modem, the card fits into the modem port on the G3's external component, leaving the Peripheral Component Interconnect and Universal Serial Bus ports for other computer peripherals.

The product costs \$136. www.bocarobot.com

Token Ring Server Kit

IP Metrics Software Inc. in Eufaula, Texas, and Modex Networks Inc. in Waltham Springs, England, have introduced the Modex High Speed Token Ring Server Kit, with 100M bit/sec. Token Ring adapters and IP's load-balancing and fail-over software. IP Metrics said the software lets Token Ring users boost performance by balancing network traffic across two or more adapters in a server. The kit costs \$199 and is shipping now.

www.ipmetrics.com

CABLETRON
COMEBACK?

Roughed-up vendor bets the ranch on network management tools, know-how

TRAPPED BEHIND far larger competitors and coming off an \$85 million loss in its most recent quarter, Cabletron Systems Inc., based in Rochester, N.H., is trying to reinvent itself by going from box vendor to network management kingpin. Cabletron chief technology officer Mike Skubisz last week discussed the No. 4 networking vendor's strategy with Computerworld senior editor Bob Wallace.

Q: What technology are you betting the future of Cabletron is, and why?
A: Management software is the first, as it allows enterprises to unlock the value of the underlying hardware technology to support their business. Management software has changed from a "nice to have" to a "need to have," and Cabletron is investing in our Spectrum [network management] platform [and] also allowing Spectrum's value to be gained through derivative applications that run on top of [Hewlett-Packard Co., Computer Associates Inc.] and Tivoli platforms.

And directory, policy and accounting services fundamentally change how you manage the network... allowing for user- or application-based decision-making.

Q: Given your position on the No. 4 networking vendor and the fact that you have been struggling, why should large enterprise users buy from you?
A: Management expertise is one reason. More and more, network managers are being asked to align the technology of the network with the business processes of the organization that they work for.

One of the most valuable tools to reduce operational cost and complexity is management software.

If we support [our customers] well and allow them to manage their multivendor environment and continue to

offer feature-rich networking products — that's a recipe for success.

Q: What technologies would improve the tools users would need to manage such things as network design, simulation and planning?

A: It's sad that there are not tools to predict the operation of a network before you build it. In every other industry, there are three steps — planning, implementation and measurement — associated with any project.

Network professionals I talk to never have the time to plan. [They] execute, then execute, then execute again until it works... then never have the time to measure the effectiveness. Cabletron is investing heavily in "what-if" analysis, capacity planning and behavioral



CABLETRON CTO MIKE SKUBISZ is betting heavily on network management tools.

analysis/modeling software.

Working in conjunction with partners such as Optimal Networks Corp., we hope to answer questions like, "What's required if we add 300 more ERP users to the network?" or "How do we allow the electronic-commerce site to support 10,000 more customers?"

Q: What are the key emerging technologies for the enterprise?

A: Watch the wireless space closely. Now that standards exist for wireless LANs, the prices are dropping and the ease of deployment and interoperability is improving. You'll also see broadband wireless technologies for the WAN that will allow users to deploy high-speed links in the hundreds of megabits for large campuses and metropolitan-area networks. ■

HP Gets Into Web-Access Management

WebQoS software designed to help companies set priority levels

BY JAKUBMAR VIJAYAN

Corporations that are grappling with ways to ensure acceptable performance and service levels at high-traffic Web sites will soon get some help from Hewlett-Packard Co.

The company this week will launch software that will let Web administrators set priority levels and tiered-access policies for Web access.

HP's Web Quality of Service (WebQoS) software will let administrators give premium subscribers or certain business units greater priority to Web services than others, minimizing disruptions in service to them.

Products announced include the WebQoS Request Controller for prioritizing user access and a WebQoS Resource Controller that automatically assigns and manages hardware resources for optimal perfor-

mance. Those products require Versions 10 and 11 of HP's Unix operating system that runs Netscape Communications Corp.'s Enterprise Server Software Version 3.6.

The company also announced partnerships with

AT A GLANCE
HP's Web
Partnerships

An example of how Hewlett-Packard is working with other vendors to ensure high Web-service levels:

Product: HP and Cisco Dynamic LocalDirector

What it does: Server information gathered by HP software is sent to Cisco LocalDirector, which adjusts load distribution between servers.

What that means: Prevents one server or group of servers from becoming overloaded, resulting in more efficient use

Netscape and Web application vendors such as Breakthrough Software and ClearCommerce Corp. to integrate their software into HP's WebQoS line.

In the next two years, HP will also expand a program that guarantees up to 99.99% availability on key applications, or less than 5 minutes unplanned downtime annually, said HP CEO Lewis Platt.

Communicating such capabilities to the market is going to be crucial, users said.

"They seem to have expended a lot of effort without establishing a signature product or service" around the Internet, said Chris Seiger, a board member of HP's Interex user group and information technology director at the Alexandria City Public Schools in Virginia.

"If they've got something, the message isn't reaching me yet," he said. ■

U.N.



CIO



IDG

Get Into Web Portals

BY DAVID BRISER

PORTALS ARE THE LATEST Web craze — in the news daily as objects of mergers and acquisitions. They're the first page you see when you connect to the Net. Portals are the ABCs, CBSs and NBCs of the Web — the most fought-over territory in the Net gold rush.

Sites such as Yahoo and Excite were once pitched as places for nonexperts to find things on the Internet. They're still that, as well as search engines and directories. But they're quickly evolving into full-service hubs of electronic commerce, mail, online communities and customized news. The four biggest portals — Yahoo, Excite, Lycos and Infoseek — compete for "eyeballs" with cable TV, magazines and newspapers; they attracted more than 200 million page views per day in the second half of last year, according to the U.S. Securities and Exchange Commission. They've even started calling themselves "networks."

Experts say the coming months will bring better-integrated electronic commerce, more multimedia (especially audio) clips and the ability to personalize portals to access specific information. Within a year, these general-interest portals will start to be eclipsed by niche portals for areas like finance and medicine, predicts Gartner Group Inc. Meanwhile, customized intranet portals will displace brand-name portals in corporations, says Hadley Reynolds, research director at Delphi Group in Boston.

I tested the three most popular portals, which are Yahoo, Excite and Lycos, according to Media Metrix (www.mediametrix.com) and NetRatings Inc. (www.netratings.com) in Milpitas, Calif. I excluded equally prominent default pages for the Microsoft Corp. and Netscape Communications Corp. browsers. Net service providers such as America Online Inc. (see story at right) and Santa Clara, Calif.-based Infoseek Corp.'s site for Lycos.

I still prefer the comparatively spare layout of The Microsoft Network (MSN). Yahoo, Excite, and to a lesser degree, Lycos, are too busy-looking and commercial for my taste. But if I had to pick one, it would be Yahoo, which just seems to have more of what anyone could want in a general-interest site.

Essex is a reviewer in Antrim, N.H.



EXCITE INC.

Redwood City, Calif.
www.excite.com

Electronic-commerce-oriented if you're looking for an alternative to Yahoo, try Excite. It puts similar emphasis on easy-to-use directories and links to its own managed sites and others judged to have quality content. Excite, though, seems more electronic-commerce-oriented (especially when you follow links off the start page) — a mixed blessing.

Excite differentiates itself with innovative features. My favorite is "dismembering search," which returns things like photographs and calendar

rather than an amorphous list of Web pages — based on your personal information. There are eight categories (companies, cities, universities, sports, music, movies, TV and weather) and more coming. I typed "Boston Bruins" and was shown the team's schedule followed by categorized Web sites, with the uncategorized list at the bottom. A movie name produced a plot synopsis and local show times.

A Charles Schwab & Co. module tracks stocks and shows price alerts like in Yahoo and Lycos, and there's a news-clipping service. Overall, the business section is geared more toward market headlines like Yahoo's than Lycos' personal finance-oriented page. But, as with Lycos, you can't reposition the search line or move the list of channels to make room for useful information. Excite also lags on up-front address book and calendar

but plans to add them.

Excite is perhaps the most balanced of the portals, but I found it the most overladen with commercial hype. I'd use it for personalized information delivery and directory-based searching.



LYCOS INC.

Wolham, Mass.
www.lycos.com

Most business-oriented USA Networks, which owns Internet's Home Shopping Network, recently announced that it might acquire Lycos — the last major portal to be snapped up. The move would position Lycos to add more ways to let surfers buy things. Lycos also made a splash during the past year by acquiring home-page and community-building sites Angelina.com and Tripod.com. There, plus MailCity's free e-mail and HotBot's excellent search engine (remember the TV ads depicting computing search agents as a menial of computers?), make Lycos a popular destination.

Lycos lets you set up a personalized page with favorite information feeds and two-way channels. Though none lets you delete the search window or a big ad at the top. Like Excite, it doesn't require a e-mail name and password (not to use your page). I built all three portals for net making it clear what those "modules" do. You can position most of them anywhere on the page, but only Yahoo lets you move the search bar. Lycos is the only one without a news-clipping service to comb the Web for articles on favorite topics. Its business section is self-presented and informative, though geared more toward personal finance than market news.

Overall, I found Lycos to have a less busy, more businesslike appearance, slightly faster screen updates and more accurate searches (especially with HotBot; the primary Lycos engine returned far fewer hits than Yahoo on broad-topic searches). I'd make it my default portal if it had MSN's superior layout and Yahoo's features.

YAHOO!

YAHOO INC.

Santa Clara, Calif.
www.yahoo.com

Best breadth and depth. Yahoo is the Coca-Cola of megasites — the first and still the best, in many ways. It attracts nearly twice as many eyeballs as second-place Excite and is many surfers' first stop after their default portal. Yahoo is in danger of losing ground in the rush to high-powered partnerships such as Infoseek's and The Walt Disney Co.'s new Go network. Big, bright and bold directories, chat rooms and news headlines — paid for mostly by advertising — might not cut it if Lycos, Excite and others grab more electronic-commerce dollars flowing along busy, media-hyped links.

That said, Yahoo remains the portal to beat. The breadth and depth of its directories are unmatched. Like Excite and Lycos, it lets you track stocks and mutual funds in near-real time, setting triggers that alert you to target prices. (Yahoo's business news page, at <http://biz.yahoo.com>, is the most popular financial site on the Web, according to ranking service Web2's Yodnet.com.) I was wowed when Yahoo posted articles about my mutual funds within two seconds of setting up my portfolio, though a three-dimensional, stock-viewer applet was slow and ugly. You can set up a second personal page, something Lycos — but not Excite — provides.

Using is your best choice for using directory links to find things on the Web. It's also strong for accessing online communities, though I prefer Lycos' broader, more visible links.

More Portals to Try

www.msn.com
Internet Explorer default page. Less type, rich channel variety. Hotmail.

www.netcenter.com
Navigator's default page.

www.aol.com
You don't need America Online as your Internet service provider to get this portal's plethora of features.

www.altavista.digital.com
Generated search engine now has portal trappings, like directories and chat.

www.infoseek.com
Respected for its search engine and roughly as popular as Lycos.



March 6, 1999

msn.com home

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Antes
Buyer's Guide
Computing
Entertainment
Games
MSN Insider
News
Personal Finance
Real Estate
Shopping
Small Business
Sports
Tax Time '99
Travel
Web Communities
Web Events
Women

Home Page
Make this your home
Personalize this page
MSN Internet
FREE!



BRIEFS

CrossWorlds Upgrade

CrossWorlds Software Inc. in Burlingame, Calif., last week released Version 2.0 of its Interchange Server, its application integration software. It now has new systems management features and support for Solaris-based Unix servers. The company also introduced packaged versions of its interface development tools, which previously were available only to systems integrators. Pricing for the software and consulting help ranges from \$500,000 to \$750,000. www.crossworlds.com

SAP Reference Series

Prime Publishing, a division of Prime Communications Inc., is rolling out seven books for IT professionals who work with SAP APO products. Two books are available now: a revised version of *Introduction to ABAP/4 Programming for SAP*, by Garth W. de Bruyn (hardcover, \$50); and *Getting Started with SAP APO*, by Dennis L. Prince (hardcover, \$29.95). The rest of the series will follow this quarter, according to the Rocklin, Calif., company. www.primepublishing.com

Who's Buying What

W. S. BACOCK CORP., a retailer of home furnishings based in Mulberry, Fla., said it will install supply-chain planning software developed by Atlanta-based LOGILITY INC. ... NETSOLVE INC. said it has won a contract to provide remote network management services for Chicago-based SECURITY CAPITAL GROUP INC. Austin, Texas-based Netw@re will manage Security Capital's multicarrier frame-relay data network.

Net Server Appliance

Cobalt Networks Inc. last week announced Cobalt RaQ 2, a rack-mountable Internet server appliance providing e-mail, and Web and network file services. The system runs the Linux operating system and incorporates a 250-MHz processor and up to 256M bytes of memory, the Mountain View, Calif., company said. Pricing starts at \$999. www.cobalt.net

Dell Remote Access Cards

Dell Computer Corp. said it now offers remote access cards with its PowerEdge servers. The cards allow small and midsize businesses to connect employees to their corporate networks from remote locations, Dell said. Remote users can access the Internet via a central server. www.dell.com

Integration Tool Hits Beta

TSI Information Software Inc., an application integration vendor in Wilton, Conn., is beta-testing an upgrade of its Marcatore software, due next month. Marcatore 2.0 will include a redesigned user interface and added Extensible Markup Language support. Pricing starts at \$50,000. www.tsiinfo.com

Addonics Remote Terminals Bow

A new line of Windows-based remote terminals is now available from Fremont, Calif.-based Addonics Communications Inc. The ART 2000 thin-client line offers application access over a network via Citrix Systems Inc.'s MetaFrame and WinFrame software. They cost \$499. www.addonics.com

FRANKLY SPEAKING/FRANK HAYES

Microsoft mishap(s)

MICROSOFT'S in trouble again. This time it turns out Windows 98 sometimes collects information about a user's hardware and transmits it to Redmond when Windows is registered — even when the user specifically directs that the information not be sent. And some of that “inadvertently gathered” information might still be stored in Microsoft databases — though no one at Microsoft seems to be exactly sure. Oh, and a unique machine ID generated by Windows 98 is also embedded in Word and Excel documents.

It's not bad enough that Microsoft's credibility has been shredded by its executives' testimony in the Justice Department's antitrust suit. Now Microsoft seems to be playing its own riff on the tune we heard a few weeks back with lot's Pentium III — a unique ID number that can be used to track customers. Except in this case, users' privacy has already been compromised.

Is it true, as Microsoft executives claim, that this was all just a collection of foul-ups? That there was no grand design to collect information users didn't want collected, no master plan to track users by the ID numbers hidden in their reports and spreadsheets?

Yeah, I can believe it. Because these days, looming even larger than Microsoft's reputation as a ruthless competitor is its growing rap as a clueless corporate klotz.

Consider what actually sparked the latest scandal — the fact that information about hardware was transmitted to Microsoft even when users indicated they didn't want it sent. Bugs happen. Fair enough. But this bug let a crucial chunk of sensitive information be collected, stored in the Windows 98 registry and transmitted to Microsoft, all against a user's wishes.

You'd think, with Windows 98's extensive testing program, somebody at Microsoft would have noticed this was happening. Apparently, no one did.

Nor did anyone in Redmond notice that the inappropriate information was apparently sitting in Microsoft databases.

At most companies, if the IT shop sat on such a huge pile of customer data without making sure it was clean, complete and appropriate, heads would roll. At Microsoft, that's apparent-

ly standard operating procedure.

Or think about those unique identifiers embedded in Word and Excel documents. What possible practical use could they have to corporate IT shops?

The most obvious would be as a way of tracking revisions to each document. Important documents — budgets, reports, contracts — are often passed hand-to-hand, both physically and electronically, among users.

An ID number embedded in each draft, along with a database of what user is associated with which PC's ID number, could work like a poor man's revision-tracking system. That could be a very useful tool if a company needs to audit a document's history after the fact.

But — having implemented a technology that offered real value to corporate IT shops — Microsoft failed to tell us about it. Instead, the ID numbers just sat there, waiting to become an embarrassment.

And unfortunately, these incidents aren't a shock anymore. They're not even a surprise.

Sure, Microsoft's under pressure from all directions. The company is bound to make mistakes. But any vendor without Microsoft's tremendous market lead that regularly fumbled so many opportunities — both for itself and for customers —

would already have collapsed.

We need better. With the amount we're spending on information technology, we deserve better. And if this is the best industry leader we have, we're even more trouble than Microsoft. ■

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His E-mail address is frank_hayes@computerworld.com.

Once feared
as ruthless,
Redmond is
now jeered as
clueless.



Load Balancing

BY BOB WALLACE

LOAD BALANCERS can help solve the "server-busy" problem that arises when servers drown from a flash flood of users trying to access them.

They prevent that problem by keeping track of where requests have been routed and knowing roughly how busy each server is.

By approximating that, they can determine where to direct the next request.

For example, a cable network company can devote a Web site to the high-profile boxing matches it broadcasts and use load balancers to handle the crush of site hits during the fights. And a computer company can use load balancers to enable salespeople to access new commission information.

Other users would find load balancing useful because it's an intelligent and affordable

method for apportioning high volumes of requests for server access across multiple machines, be they on the Web or in a data center.

In these scenarios, servers operate more efficiently and end users are happier because the server-busy messages are eliminated.

The more efficient servers are the less likely the need to add more servers to the network—an expensive move.

Some load balancers can delegate requests across a wide-area network, says Ted Julian, an analyst at Forrester Research Inc. in Cambridge, Mass. However, he notes that most load balancers were designed for use with servers on a single LAN.

If the load-balancing software supports WANs, then servers can be added to the network at any point in the world, and the servers' perfor-

mance would still be as high as it would be if they were part of a LAN. And WAN costs are held in check because requests are typically routed to the closest server. The further you send data over a WAN, the more it costs.

Load-balancing technology can take many shapes. It can be special software that runs on a dedicated server, a proprietary black box or one of many capabilities in an advanced

AT A GLANCE

Where to Route

A sample of ways you can route requests using load balancing:

1. Requests can go to a backup server if your primary server crashes.
2. Requests can be routed to servers based on the content of the server.
3. Users can be assigned priority levels; for example, a paying customer's request can be routed before a visitor's request.
4. Disaster recovery: If a server is down because of a flood, requests can be routed to a server located in another facility in another city.

LAN switch—a computerized box that quickly delivers data from one segment of a LAN to another.

Pricing for software-only load balancers starts at a few thousand dollars, and black-box system pricing begins at around \$30,000. Load balancing already is built in to some LAN switches.

Server Content

Not only can companies configure their load balancers to route requests based on server use, but requests can also be routed based on server content such as video, audio or text, according to Bob Bellman, president of Brooktrill Research in Natick, Mass.

For example, if a company has video on two of its five servers, it could route requests from users who want video to those two servers and keep text requests directed to the other three servers, Bellman says.

"You'd want the servers handling the video to be higher-performance units than those handling the simple text requests," he says. ■

MORE ONLINE

For more information about load balancing, visit our Web site:
www.computerworld.com/news

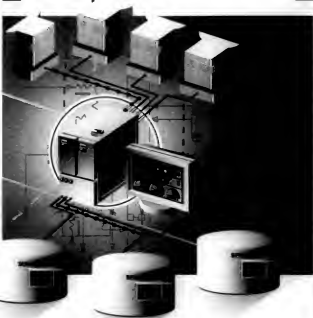
Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefania McCann at stefania_mccann@computerworld.com.

DEFINITION

Load balancers can prevent servers from being overloaded. They do that by distributing large numbers of access requests across multiple servers. The requests are directed to the most-available server based on utilization. The requests can also be based on content type such as video and text.

How load balancing works:

1. Multiple users request Web server access.
2. Based on its history of routing calls, the load balancer decides which server should get the request from each PC.
3. The load balancer directs the request to the least-used server. Depending on how the servers are set up, the load balancer could route the request to a server based on content.





IT Goes to Hollywood

For six years, Digital Domain has been the clear leader in digital visual effects for feature films. The company has received four Academy Award nominations. Some of its best-known credits are *True Lies*, *Apollo 13* and, of course, *Titanic*. Scott Ross, Digital Domain's co-founder, president and CEO, originally wanted to be a rock-and-roll star and was in fact a jazz musician before working at Lucas Films from the mid-'80s until 1992. Ross recently spoke with Stuart Silverstone at Digital Domain's Venice, Calif., studios.

How has your computing equipment changed in the past six years? When we started working in high-resolution graphics, there was only one platform: Iris hardware running (Silicon Graphics Inc.'s operating system). Over these six years, there's been a migration toward NT, with lots more competition on the hardware side from DEC, HP, IBM. Now there's equipment with enough graphics capacity at a price/performance level far superior to what was available in 1992-93. For imaging computers, we have a dual standard: half SGI and half Alpha or Intel-based NT platforms — with SGI now migrating toward the NT-based solution.

On the NT side, we just brought in a host-load of IBM IntelliStations to supplement the DEC Alphas we acquired about two years ago.

How about application software? The acquisition of Softimage Inc. by Microsoft provided the first major 3-D computer graphics ported to NT. Now other applications are moving to NT. But cost-effective solutions for compositing and

WHO IS HE?

In 1993, Scott Ross co-founded special effects company Digital Domain with Academy Award winners James Cameron and Stan Winston. The company's work on director Cameron's *Titanic* won a 1997 Oscar for Best Visual Effects.

real-time, high-resolution rendering aren't there yet; they're still too compute-intensive.

Also, we've written a lot of code in-house in C++, all object-oriented. One advantage of the time we started [our business] is that object-oriented programming came into fashion, allowing us to use building blocks in most of our software programs. Previously, computer graphics developers had written all their code time and time again, for different purposes, but using similar kinds of applications.

What about servers? For imaging computing, with its rendering issues of high-resolution, deep-bit-per-pixel images, we built render farms — SGIs and, on the NT side, racks of DEC Alphas. I wish there was a cleaner solution. We run Linux, which gives us an opportunity to run

Unix-based as well as NT-based platforms on our render farms. For real-time compositing, we have servers that are multi-CPU, parallel-processor machines, big SGI Onyxes.

How do you stay ahead of the visual-effects competition that's emerged? There are no big surprises [anymore] in technology. We're aware of most everything; vendors show us products a year or two before they are produced, and we're involved in beta testing. We're up to speed on the next 12 to 18 months.

It's easy to talk about technology. But that's not what it's all about. It's really about artistry, the men and women who use the technology. That's what keeps you ahead of the competition. The real issue is retention of talent, recognizing artists, the persons who drive the boxes.

What kind of staff keeps the technology running? The imaging support group is 7/24 coverage. It's about six people. While we don't have a help desk, we're working on something like that, because as we bring in more and more artists, they are less and less familiar with computer technology — which puts more demand on our system administrators and IT people.

You must be constantly upgrading. We're lucky enough to be on the bleeding edge and to be a visible company, so vendors afford us the opportunity to see the latest and greatest. And in some cases, afford us the opportunity to design it with them.

What could corporate IT managers learn from Digital Domain? Fairly soon, the computer will no longer be a productivity tool, but a communications tool. The power base has moved from hardware manufacturers to software developers. In a very short time, it will move away from software developers toward the end user, and then the power really falls into the hands of the creative person.

The technology-interface can now, using the more intuitive devices, create without writing algorithms [or] script shells. I can imagine a future of modeling and painting with a pair of virtual reality glasses: seeing the model in 3-D, using a digital point brush or sculpting knife to model. It's not that far away; we've been doing some experiments with it.

Conversely, what would you like to learn from corporate IT managers? Security. We deal with images worth millions of dollars; images that are highly confidential. With secure distributed networking, we could send images for rendering to a central location. We'd like encryption-encoded security to be able to extend beyond our own firewall.

Any promising technologies on the horizon? Digital projectors. I'm starting to see projectors that come up to the quality of film projection — another step in a total digital process — allowing the acquisition of images on celluloid film, intermediary processing on digital and final projection with digital technology that looks like film. ■

Silverstone is a freelance writer in Los Angeles. His Internet address is stuart@graphics.org.

IBM WAXES,

Customers say rapid response
and extended service plans win
big for IBM By Kevin Burden

OTHERS WANE



EXCLUSIVE COMPUTERWORLD SURVEY: SOFTWARE SUPPORT

VENDORS — ESPECIALLY Computer Associates International Inc. and Microsoft Corp. — could learn a lot from IBM about supporting software. In a customer-satisfaction survey, IBM emerged as the model provider of software support, while CA scored the lowest overall satisfaction score.

We asked 151 information technology managers to rate the support from their primary software vendor. Although the phone surveys, conducted by Computerworld's IT Intelligence Unit, can't characterize the opinions of the entire installed base, they still point to pluses and minuses in dealing with five top vendors: IBM, CA, Oracle Corp., Novell Inc. and Microsoft.

In product surveys, IBM's customer satisfaction often lands somewhere in the middle of the pack. But for service and support, our respondents said no other vendor comes even close to satisfying customers as well as IBM.

One negative mark on an otherwise shining IBM record: Some users said they had hoped that IBM's 1995 purchase of Lotus Development Corp. would inspire Lotus to show at least a hint of the same commitment to service by now. But so far, "Lotus hasn't shown us it's learning anything in the way of service from IBM," said Richard Wright, information systems director at Hazelwood Farms Bakeries in Hazelwood, Mo.

Oracle and Novell follow IBM in the standings, and survey responses indicate that both are equally capable of satisfying their customers' service needs. Both are customer-focused, and that orientation shows up in very respectable scores.

Microsoft, the surveyed IT managers said, has a lot of room to improve. We questioned Microsoft customers more closely in follow-up interviews; most said they would rather look for their own answers on the Microsoft Web site than deal with the company's technical support staff. It perhaps isn't surprising that Microsoft's Web-based support was rated the most effective of any vendor included in the survey.

The degree of irritation directed at CA, which placed last in overall support satisfaction, was remarkable. Users complained that the company supports its main products like Unicenter TNG and Jasmine well but nearly ignores its other products.

Software support, whether it comes directly from vendors or through third-party suppliers, will continue to be very important as the world moves more toward a digital economy, according to Chris Hoffman, research manager at Framingham Mass.-based International Data Corp. (IDC). "There's incredible pressure [on IT managers] to leverage technology just to keep up. And with availability of IT skills falling, users will lean heavier on vendor support in the future."

If high reliance on vendor technical support is the only criterion, the future is already here. Nearly one-third of the 151 survey respondents said they placed more than 100 technical support calls in 1998. (The average was 55.) And 37% said the number of calls they made in 1998 increased from 1997.

Software Support, page 80

Continued from page 79

EXCLUSIVE COMPUTERWORLD SURVEY: SOFTWARE SUPPORT

IBM
OVERALL
SATISFACTION
4.0

IBM's whatever-the-customer-wants approach to service has made it the benchmark by which all other vendors are measured, according to several respondents we questioned. The company scored highest in six of eight rating categories and achieved the highest customer-satisfaction grade in the entire survey for its emergency and mission-critical service.

Past survey results and anecdotal evidence suggest that this isn't exactly surprising news. IBM's around-the-clock service is legendary. IDC's Hoffman says. Survey results merely confirm that the company's policies haven't slipped.

IBM has been honing its service programs for more than 30 years. It has nailed down such logistical factors as how many service representatives are needed in particular geographic areas, which types of situations require full-time, on-site technicians and which require only a technician who is a half-hour away, Hoffman says.

Our IT managers gave the highest grades to the responsiveness and knowledge demonstrated by IBM's phone staff. Unlike Microsoft users, IBM users said the phone was the first support tool they turned to when they had general questions about IBM products.

IBM, they said, best follows the priorities users set when calling in problems. IBM representatives ask users to classify their problems according to seriousness. Priority 1 means a sys-

tem is down. When that happens IBM's goal is to connect the user to the person best qualified to fix the system within the hour. "They've hit it every time for us," says Janice Hardrath, information systems director at Aerostructures Corp. in Nashville. "When you set a higher priority to your problem, you always get a more experienced support person right away. With Baan, the priority rating doesn't seem to work as well yet."

When Aerostructures was installing a Baan Co. system on its OS/390 mainframe last year, the company called IBM three times per week, but it hardly bothered to try Baan, Hardrath says. As long as your priorities always match your problems, IBM will give you the support you need, she adds.

IBM lost ground in our survey over Web-site support, however. Our surveyed managers said IBM's site is OK for logging minor problems into a queue but not among the best when users need to quickly locate specific solutions. IBM wasn't alone in the area of weak Web-based support; most company Web sites came in for the same criticism. But it's certainly one place that IBM needs to work out.

Scoring Highlights

Top criteria on a scale of 1 to 5, where 1 is very poor, and 5 is very good

Responsiveness of phone staff	4.0
Helpfulness of phone staff	4.0
Effectiveness of Web site	3.5
Responsiveness through e-mail	3.4
Preventive maintenance	4.0
Value for price	3.9
Quality of basic service	3.9

ORACLE
OVERALL
SATISFACTION
3.6

Oracle's biggest problem? "It's not IBM," several respondents said. Beyond that, most said it's about as good as a company that isn't IBM can get.

Oracle recorded four second-place finishes, more than any other vendor was able to garner. Even more impressive, it scored them in areas that generally came in for a lot of criticism: availability, helpfulness of its phone staff and quality of its basic and mission-critical support plans.

Oracle's most basic service plans were its biggest strength. That's the area where it recorded its highest satisfaction grade and received numerous accolades from customers. "You'd never know we were just using Oracle's basic package by [how well] we've taken care of," says Frank Palaz-

zolo, director of IS applications at Henry Ford Health Systems in Detroit. Oracle's mission-critical support is also among the best available, and according to a company spokesman, some users may see it improve very soon. Last year, Oracle began training several of its integrators in implementing and supporting Oracle applications as part of its Oracle Service Provider program. That should give Oracle customers another avenue of support.

Scoring Highlights

Top criteria on a scale of 1 to 5, where 1 is very poor, and 5 is very good

Responsiveness of phone staff	3.6
Helpfulness of phone staff	3.6
Effectiveness of Web site	3.3
Responsiveness through e-mail	3.3
Preventive maintenance	3.4
Value for price	3.3
Quality of basic service	3.9

You'd never know
we were just using
Oracle's basic package
by [how well] we were
taken care of.

FRANK PALAZZOLO, DIRECTOR OF IS APPLICATIONS,
HENRY FORD HEALTH SYSTEMS

NOVELL OVERALL SATISFACTION 3.5

"Novell understands the impact on our company when we have problems with their software," says Terry Jackson, director of corporate IS at the Traver Foundation in Madisonville, Ky. Better yet, "they do something about it."

Novell finished close behind Oracle in overall customer-satisfaction scores. And it scored second only to IBM in a few categories in which Oracle fell to third or worse, such as offering preventive maintenance and having an effective Web site for support.

Our follow-up interviews with Novell customers confirmed the initial impressions: IT managers characterized Novell's support team as above average and very attentive to its users' needs. They also praised its Web site, making Novell somewhat

unique in this study.

The satisfaction rating of its site's effectiveness wasn't entirely stellar, but users such as Terry Maternach, Unix systems manager at Cedarapids Inc. in Cedar Rapids, Iowa, says it's rare when his questions can't be answered by a visit to Novell's site. Novell also scored highest for its responsiveness to e-mail, which may have much to do with the success of its Web site.

Scoring Highlights

Top criteria on a scale of 1 to 5, where 1 is very poor, and 5 is very good

Responsiveness of phone staff	3.5
Helpfulness of phone staff	3.6
Effectiveness of Web site	3.4
Responsiveness through e-mail	3.4
Preventive maintenance	3.5
Value for price	3.6
Quality of basic service	3.7

MICROSOFT OVERALL SATISFACTION 3.2

The effectiveness of Microsoft's support depends on who you are, or whom you know. The company is highly selective in determining who receives its Premier Support plan, the very attentive service it's using to get deeper into the corridors of the Fortune 500.

The very large — 2,500 users or more — enterprise-level companies fortunate enough to be included in Premier Support receive Microsoft's undivided and very effective attention. But the mediocre grades Microsoft received from our survey come largely from the rank-and-file companies that don't qualify for Premier class. These users, the vast majority of Microsoft customers, are bounced to one of the company's many support partners.

Microsoft placed last among the five vendors in several key areas, namely the availability and helpfulness of its telephone staff, its preventive maintenance and the quality of its basic as well as its mission-critical support.

One bright spot for Microsoft: Users really like its Web-site support

and gave it the highest grade of any in our survey. "This matches the strong self-support culture at Microsoft. And unlike its support partners, its Web site is [under] its control," Hoffman says. Respondents said that between its Web site and its TechNet informational CD-ROM service, Microsoft is the best at letting its users help themselves. "Ninety percent of my IT questions are answered by the information on their site," says John Baldino, IT director at Wawa Food Markets Inc. in Philadelphia.

"Receiving TechNet is like having the entire Web site sent to us each month on searchable CD-ROMs," says Ed Smith, network manager at Homeland Stores Inc. in Oklahoma City. "For the two years we've subscribed to it, we haven't had to call Microsoft once."

Scoring Highlights

Top criteria on a scale of 1 to 5, where 1 is very poor, and 5 is very good

Responsiveness of phone staff	3.1
Helpfulness of phone staff	3.8
Effectiveness of Web site	3.6
Responsiveness through e-mail	3.2
Preventive maintenance	3.0
Value for price	3.3
Quality of basic service	3.4

If you're on a mainline product, you're probably happy with CA's support.

CHRIS HOFFMAN, RESEARCH MANAGER,
INTERNATIONAL DATA CORP.

CA OVERALL SATISFACTION 3.1

"Dead last with a bullet," says Ron McCauley on learning of CA's low customer-satisfaction rating. McCauley, who is the IS director at Shari's Management Corp. in Beaverton, Ore., says he's moving away from CA products because he isn't getting the support he needs.

McCauley was using MLink for remote communication to his Unix environment before CA took control of the product when it acquired Legat. "In our experience, if you have a package you like [and] then CA acquires the company, that's unfortunate," McCauley says. "We've seen a dramatic drop-off in service for products now under CA's control."

This isn't new territory for the company. CA has consistently scored poorly on service issues in most Computerworld customer satisfaction surveys. That's because CA has never had the heritage of a service company, Hoffman says. "It is a product company without the strong service partnership of Microsoft," he says. CA has

acquired so many products that it's forced to choose which ones it will support while leaving the rest of its users to work out their own problems.

While our respondents disliked most Web-site support offered by the vendors in the survey, CA's showing was especially poor: it alone failed to receive a single "very good" rating for its Web site.

The good news: CA did receive a respectable grade for its mission-critical service, proving it can perform well when it wants to. "If you're on a mainline product [such as Unicenter TNG or Iamline], you're probably happy with CA's support. It's the other 400-plus products that suffer," Hoffman says. ■

Scoring Highlights

Top criteria on a scale of 1 to 5, where 1 is very poor, and 5 is very good

Responsiveness of phone staff	3.3
Helpfulness of phone staff	3.3
Effectiveness of Web site	3.0
Responsiveness through e-mail	2.9
Preventive maintenance	3.1
Value for price	2.8
Quality of basic service	3.5

Technology Happenings

■ **Fairchild Semiconductor's** Robert Noyce and Texas Instruments Inc.'s Jack Kilby separately file for a patent for the integrated circuit. Both men eventually are recognized as co-inventors.

■ **The Whetstone** at MIT and the **Harvard Mark I** are shut down.

■ **IBM** introduces its first transistorized computer, the 7000 series. The first is a transistorized version of the 701, the 7090.

■ **IBM** announces two desk-size machines - the **IBM 1401** for small-business users and the **IBM 1620** for scientists. The 1401 is the most popular computer up to this time - more than 10,000 will be sold.

■ **General Electric Co.** delivers **32 ERMA (Electronic Recording Machine - Accounting)** systems to Bank of America in California to help process checks used by the public. The ERMA system uses magnetic ink character recognition technology, which captures data from checks.

■ **MIT** produces the first product made using computer-aided design: an aluminum sailing.

■ **An IBM 704** is programmed to translate printed text into Braille.

■ **The Radio Corporation of America** introduces the **RCA 501** transistorized computer.

Born in 1959

■ **Peter Sher**, mathematician, computer scientist, pioneer of quantum computing algorithms

■ **Stephen Wolfram**, creator of the computer program called **Mathematica**

■ **Keith Lockhart**, Boston Pops conductor

Other Notables

■ **Average price of a gallon of gas**: 30.5 cents

■ **The BMW 600** costs \$1,498, accelerates up to 60 mph and gets 50 miles per gallon.

■ **Best Picture**: *Ben Hur*

The Creation of Cobol

BY MARY BRANDEL

YOU KNOW that little year 2000 problem? Well, it all began 40 years ago. On May 28, 1959, the Conference of Data Systems Languages (Codasy) met for the first time, with the idea of developing a universal language for building business applications. That language was Cobol, short for "common business-oriented language." And it's Cobol's dramatic success that's at the heart of the millennium bug.

Influenced by Fortran, a programming language for the scientific community, and FlowMark, an English-language compiler for business data processing built by Grace Hopper, the group recognized the growing needs of the business community.

"We thought, if the scientific programmers are going to get a single language, we could do the same for business," says Bob Bemer, who at the time was completing work on Fortran at IBM. With Hopper, Bemer served as an adviser to Codasy. He is responsible for coining the term Cobol.

By April 1959, that undercurrent swelled into action. At an informal meeting at the University of Pennsylvania in Philadelphia, a small group of computer manufacturers, large business and academics asked the Department of Defense (DOD) to head the effort.

The next month, the DOD called the first meeting of Codasy, which consisted of

eight computer manufacturers and a few large users. The DOD broke Codasy into several committees, and by June, the nine-member "short-range committee" was asked to undertake a six-month investigation into developing the language.

"We worked almost full time doing the language specification, even though we were all employed by different employers," says Howard Bromberg, who was a Codasy member and an employee at RCA Corp.

In addition to machine-independence, one of the most important requirements of the language was simplicity. The committee wanted the language to be readable by laypeople, which led to the idea of using English.

But just because Cobol was designed to be easy to learn doesn't mean it was easy to build.

"In business, there are no scientific laws and no algebra, but there are different laws for the 50 states, different fiscal years and different reporting



PARTICIPANTS AT COBOL'S 25TH ANNIVERSARY celebration at The Computer Museum in Boston on May 18, 1985, surround the Cobol Tombstone. Left to right: Riet Hennis, John J. Jones, Jan Prokop, Oliver Smoot, Thomas Rice, Donald Nelson, Grace Hopper, Michael O'Connor and Howard Bromberg

requirements," Bemer says. In addition, computer manufacturers were trying to develop on their commercial Cobol compilers while Cobol's specifications were being defined. All decisions had to be approved by Charlie Phillips, the DOD representative who directed Codasy.

"I used to get frustrated—I had a group of people sitting there trying to build a Cobol compiler," Bromberg says.

That led to the famous "tombstone incident." Bromberg sent a granite tombstone to Phillips with the word Cobol inscribed on it. He figured it would get his point across about the fate of Cobol if things continued to move so slowly.

A complete specification was finished in just six months. That was in December 1959. By the following year, Cobol was commercially ready, and for the next 20 years, more pro-

grams were written in Cobol than any other language.

Unfortunately, it was the resulting tidal wave of Cobol programming that now has us anxiously checking our watches as they tick away toward 2000.

Although the Cobol creators played their part in the problem—specifying two-digit year fields for capturing and manipulating system dates—the blame falls just as squarely on the programmers, who could have used four-digit year fields, says Jerome Garfunkle, a year 2000 consultant who served on the American National Standards Institute's Cobol Committee for 20 years.

In 1974, Cobol officially changed to four-digit date fields, but that change obviously didn't catch on right away.

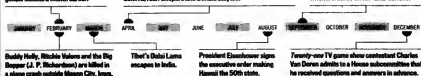
Brandel is a frequent contributor to *Computerworld*. Contact her at mbrandel@cwinc.com.



▲ **Fidel Castro** becomes premier of Cuba after expelling President Fulgencio Batista a month earlier.

▲ **NASA** announces the first seven American astronauts: Scott Carpenter, Gordon Cooper, John Glenn, Gus Grissom, Wally Schirra, Alan Shepard and Donald Slayton.

▲ **Soviet space probe Luna II** becomes the first man-made object to reach the moon when it crashes on the lunar surface.



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 - Mark, age 17, Cisco Networking Academy student

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Fran Quitell

*Nationally Recognized Career Expert and
Computerworld's CareerAdvisor Columnist*

With a lengthy background in high tech careers and recruiting, Computerworld's CareerAdvisor Fran Quitell specializes in providing in-depth information for job seekers and a "Recruiting Scoreboard" to help employers audit and improve their internal recruiting practices. Fran is author of the book *Firepower: Everything you need to know before and after you lose your job* and is the original creator of The FirePower Career Forum on The Microsoft Network. She also publishes career advice at www.careerfube.com and tips for employers at www.yourcareer.com

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Will the Real Silicon Valley Please Stand Up?

Growing competition is spurring Valley companies to give their work culture a serious makeover
By Emily Leinfuss

WITH ALL the competition for the Silicon moniker — Silicon Alley in New York, Silicon Prairie in the Midwest — it may be hard to recognize the real Silicon Valley in California. Especially because some say it's entering an era of kinder, gentler and a bit slower work practices.

The first sign of change in Silicon Valley is the dip in the local economy's growth. Overall expansion fell from 5% to 2% in the past two years because of the Asian economy and a slowdown in the semiconductor industry, says Doug Henton, president of Collaborative Economics in Palo Alto, Calif., an economic indicator consulting firm.

That may be a blessing in disguise, because the area is saturated to the development breaking point. Every nook and cranny is already occupied by an office building or a house. Companies searching for IT talent are increasingly looking to import from outside the Valley and are searching for ways to meet the needs of people who are used to a slower pace and lower cost of living.

The third indicator is that job perks are changing. Com-

panies that once gave away rides to the corporate jet and Mercedes Benz are giving workers their lives back.

Increased competition has Valley companies beefing up on perks, benefits and compensation, says David Schutt, senior manager of global workforce strategies at Nortel Networks in Santa Cruz, Calif. This is causing a new wave of companies to offer more intangible stuff like flexibility and a more balanced work and home life," he says.

Schutt says more and more Silicon Valley IT pros are working from home and exercising their rights to the freedom and flexibility offered as recruiting perks. Nortel offers such perks by being more open to telecommuting and providing a health spa, gift shop, dry cleaners and travel agency at its facility — and, of course, the time to take advantage of them.

Skill Sets

IT skills needed in Silicon Valley are broad and include client/server development, Internet and networking expertise and the imagination to envision systems in convergence. "Telecommunications, data communication and multimedia are all coming together,"

Schutt says.

Schutt suggests that job-hopping is slowing because of a leveling out of compensation across the board. That may be true at IT and vendor firms. But at non-vendor companies that can't necessarily match the financial aggressiveness of their neighbors, managers are finding other ways to prevent the loss of good IT professionals and are changing the dynamics of employment from short-term to long-term stays.

A Sense of Care

Creating a more stable workforce is driving Menlo Park, Calif.-based SRI International to rethink its incentives. Jim Swartz, CIO at the high-tech firm incubator, is developing a vesting program that would build over several years to help tie employees to the company.

And Randy Gardner, vice president of IT at Viking Freight Inc. in San Jose, Calif., takes extra care to appraise promising newcomers and peak performers. He also strives to maintain the quality of employee work life by paying attention to career growth and giving them the sense that the company is looking after them. "I make sure managers encourage IT employees to ensure they are happy, challenged and well-esteemed," he says.

Recruitment strategies are also changing. For example, Mike McNeal, director of human resources for U.S. operations at Cisco Systems Inc. in San Jose, says managers at his firm don't wait for talent to come to them. Cisco's proac-



Experience Raises Silicon Salaries

Average total compensation in Silicon Valley region for 1994:

JOB TITLE	1-2 YEARS	3-4 YEARS	5+ YEARS
Network admin./analyst	\$53,000	\$56,000	\$75,000
LAN manager	\$61,000	\$66,000	\$80,000
Project manager, systems and programming	\$68,000	\$78,000	\$89,000
Senior systems analyst	\$58,000	\$66,000	\$77,000
Senior systems programmer	\$62,000	\$68,000	\$78,000
Senior programmer/analyst	\$58,000	\$67,000	\$77,000
Programmer/analyst	\$47,000	\$55,000	\$66,000
PC support specialist	\$35,000	\$41,000	\$48,000
Computer operator	\$31,000	\$35,000	\$39,000

SOURCE: PULSE RESEARCH

BASED ON COMPUTERWORLD'S 1995 MIDCARE SURVEY TO BE PUBLISHED MARCH 20, 1995

tive tack involves targeting talent pools and using aggressive sales and marketing tactics.

In light of that fact, if IT professionals are great at what they do, continually educate themselves, are visible and innovative and take educated risks, "the Valley will find you," McNeal says. ▀

Leinfuss is a freelance writer in Saratoga, Fla.

A ROLL OF THE DICE

It doesn't take a market economist to figure out that Internet, network-based and software companies are booming in Silicon Valley. But information technology professionals at non-vendor firms in the Valley may be the trade-off in the stock options and incentives, particularly at high-profile start-ups, is working in chaos with no safety net.

"High growth means there is chaos in the organization, which affects the work environment and attitudes," says Randy Gardner, vice president of IT at Viking Freight. Plus, it's a gamble to work at the

Ellis and the Escorts, says Ken Phillips, director of IT for the city of San Jose. "You are rolling the dice, and the payoff may be big, but it may not," he says.

Gardner says corporate culture conflicts are between larger, more entrenched companies and start-ups. "The key for IT players is to know what you want," he says. "At Viking, we have a well-established, structured environment. People who like that and are working at a more chaotic company may get disenchanted."

As Viking prepares to hire 35 individuals in the next 10 months, Gardner says he's up against a wall. "There is a shortage of skilled workers in all leading technologies: database administration, client/server

development, Java and Internet development, and quality assurance," he says.

To mitigate some of the challenges of hiring IT professionals in Silicon Valley, Viking is joining a growing number of firms that are establishing auxiliary development facilities outside the Valley. In Viking's case, it will staff project teams to develop systems in a new center in Phoenix.

David Schutt, senior manager of global workforce strategies at Nortel Networks, identifies that as a trend. But that doesn't change the fact that the Valley is the only place where you really rub shoulders with the computer industry elite," says Jim Swartz, CIO at SRI. — Emily Leinfuss

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Programmer/Analyst needed F/T by Advanced Systems Research & Design Co. in Concord, MA. Must have 5 yrs exp in design of software, strong knowledge of which a minimum of 2 yrs should be demonstrated and experience of working under Win NT not web-based systems. 80,000.00. On Comp Sci or Comp Eng need. Respond to: HR Dept, Craytek Inc, 3 Danton Hill Square, 4D, Concord, MA 01742

Systems Analyst wanted by Computer Systems Co. in March. Must have 2 yrs experience in business systems, pricing analysis, system pricing & optimization, system pricing and MANUPLAN, working for some systems in Japanese language environment. Respond to: HR Dept, Sunbeam Computer Systems, USA Inc, 600 Third Ave, 10th Fl., New York, NY 10016

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2. Systems Administrator applied to Computer Services Co. in Philadelphia, PA. Must have 1 yr exp in network administration, network design & troubleshooting of LANs. Must have advanced knowledge in a Unix environment. Respond to: HR Dept, Computer Services Co., 1000 Locust St., Philadelphia, PA 19106
3. Systems Administrator applied to Computer Services Co. in Philadelphia, PA. Must have 1 yr exp in network administration, network design & troubleshooting of LANs. Must have advanced knowledge in a Unix environment. Respond to: HR Dept, Computer Services Co., 1000 Locust St., Philadelphia, PA 19106

Database Administrator wanted by IT Co. in Union, NJ. Must have 2 yrs exp in performing database administration on R2, 4000, 486, Sun Sparc Server, Sun OS & Windows Server platform using Oracle, SQL, Sybase in online environments and performing database jobs using C, Shell & C shell scripting. Apply by resume to: John Morrison, HR Consultant, 1000 North Ave, Union, NJ 07083

Principal Software Consultant needed by internet-based business solutions provider in Cambridge, MA, to manage technical support & design of projects & support & develop applications using C++, Java, CORBA, OO and system C/C++ applications, distributed computing, RDBMS, TCP/IP and Unix. Must have 10 yrs in Comp Sci or related major and 1 yr exp in leading design & development of distributed object-based applications. Respond to: HR Dept, Cambridge Internet Solutions, Inc, 219 Water St, Suite 2, Cambridge, MA 02139

Programmer/Analyst needed F/T by Advanced Systems Research & Design Co. in Concord, MA. Must have 5 yrs exp in design of software, strong knowledge of which a minimum of 2 yrs should be demonstrated and experience of working under Win NT not web-based systems. 80,000.00. On Comp Sci or Comp Eng need. Respond to: HR Dept, Craytek Inc, 3 Danton Hill Square, 4D, Concord, MA 01742

Systems/Sales Engineer needed by Waltham, MA Co. involved in Visualization Software. Must have BS in Comp Sci and 6 mos experience in C++ and 2 yrs exp in software design. Respond to: HR Dept, Advanced Visual Systems, Inc, 300 Fifth Ave, Waltham, MA 02052

Programmer/Analyst Design, develop & implement applications using CICS, COBOL, VSAM & Assembler on IBM mainframe hardware. Reg. Rec. & Comp Sci - Math or Eng & 2 yrs exp. Employer is a computer consulting company. Relocation required to client sites for periods from 6 mos to 1 yr. M/F. Salary \$34,360/yr. Send resume to: Southern Marine, Attn: V.P. HR/SC, 1145 C Street, Suite 101, 177 & 102 St. NW, Richmond, VA 23016. Ann Job #2

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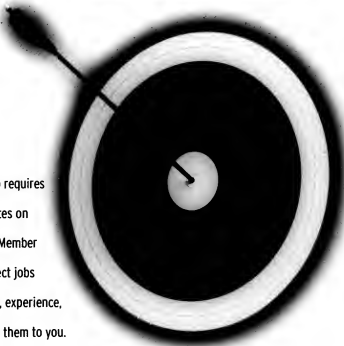
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MILLENNIUM MADNESS

Steps for managing year 2000 anxiety from Kevin Gould, president of the I-800-THERAPIST Network (www.i-800-therapist.com)

- Separate real concerns about computer operation problems from catastrophic thinking. Decide if your fears are reality based. Challenge and question dire predictions about Y2K. Get the facts.
- Place your worries into two categories: those you have control over and those you have no control over. Practice letting go of the latter.
- If your computer really won't work in the year 2000, take active steps to fix the problem. Action will ease your anxiety.
- Remind yourself that you have previously coped with change. Write down specific instances.
- Block negative thinking and refocus on something positive.



ILLUSTRATION BY JIMMY KIMBLE

PLEASE STAND BY

Bill Gates and video aren't mixing well these days. He didn't look good on tape in Microsoft's antitrust trial. And a video problem interrupted his keynote at a Microsoft conference in Japan last week. After standing in defiance waiting in vain for the sound to start on a video, an exasperated Gates walked off the stage. Forgetting his microphone was still on, he unwittingly

announced for all to hear "We can just come back. Skip it. I mean, Jesus?"

SIGN OF THE TIMES

Bad news for **Netscape** Pharmaceutical giant **Eli Lilly** is scrapping its use of Navigator in favor of Microsoft's Internet Explorer. Worse news: "It has nothing to do with the capabilities of the two browsers," according to Lilly information officer Edward Tunstall. Lilly already has a purchasing

agreement in place with Microsoft. Tunstall said last week, and "my goal is to decrease the number of vendors we deal with."

A PALMPILOT IT AIN'T

This week at Germany's huge CeBIT trade show, DaimlerChrysler will showcase a **Mercedes-Benz V-Class Multi-Purpose Vehicle** equipped with a Business Console Option. The option consists of an IBM ThinkPad laptop with speech-recognition software, printer, telephone, fax capability, a wireless link to the Internet - and a desk to put it on. Now that's mobile computing.

OVERHEARD

Former U.S. Secretary of Labor **Robert Reich**, exorcising sarcasm at a BusinessWeek conference for CFOs in Scottsdale, Ariz.: "Tim going to stay in bed on Jan. 1 and Jan. 3, 2000. No airplanes. No elevators. No toasters..." Quake Vice President **Joan Dashi**, expressing amazement at how Boeing builds its complex 777 aircraft: "How do they do that? If they do it like we do software, we can't fly."

RUMOR MILL

SAP has apparently spiced its idea of sharing consulting firms up to \$4 million per year to be certified to work on R/3 projects. ...SCO should announce a date center edition of its **UnixWare** operating system at CeBIT this week in Germany, along with Intel, Compaq, KCL, Unisys and IBM.

AND YOU THOUGHT YOU HAD UPGRADE PROBLEMS

Everyone was smiling last Friday in Independence, Mo., as NATO added three new members: Poland, Hungary and the Czech Republic. But like a thorny corporate merger, no one was smiling at the cost of making the former Soviet bloc countries IT systems work with those of NATO. Case in point: Poland's estimate to get its communications systems to work with NATO's is about \$7 billion just in the next year - and that's without Y2K fixes. Don't Communicate your news tips and tidbits to news editor Patricia Keefe by e-mail at patricia.keefe@computerworld.com or call (508) 820-8863.

Michelangelo Project Creates Virtual Sculpture

THROUGH ADVANCES in computer graphics, art lovers could soon examine highly realistic, three-dimensional models of Michelangelo's statues at local art museums or on their PCs. Stanford University's Digital Michelangelo Project is creating computerized copies of the sculptures, making it possible to zoom in on tiny details or to view the statues from different angles - such as the top of David's head, which few people have seen. The computer models could even be used to help restore damaged areas, create accurate replicas or animate the classic figures. The first step, already under way, is scanning the sculptures in Italy.

STANFORD's digital scanning team already has discovered that Michelangelo's "David" is 17 feet tall - three feet taller than history books say.

The 5th Wave



ILLUSTRATION BY JIMMY KIMBLE

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Gary Fischer, Data Warehousing Manager at Sony Electronics says, "It gives everyone from senior executives to operational staff the answers they need when they need them."

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